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Business Improving.

A letter from Lowell to the Boston *Traveler* says:—The "spindle city" is gradually resuming its steady hum of industry and wonted business-like appearance. With the exception of the unfortunate Middlesex, most of the mills are in running condition, giving the operators from two-thirds to full time. The cold snap and light flurry of snow, which, by the way, is giving us excellent sleighing, has had the effect of making trade look up, for it has brought in a good sprinkle of our rural neighbors, who, with their produce, generally have a little ready cash on hand for investment in dry goods, groceries, &c., which it does not always pay to take to Boston.

All departments of the immense iron works at Boonton resumed work on Monday. For the last two months only the blast furnace has been in operation; the puddling furnaces, nail factory, keg factory, &c., being closed. The number of hands, when these works are in full blast, is something over 500.

The Fall River Mills, 9,000 spindles, at Providence, is running full time on print cloths. So is the Anawan Mill, also 9,000 spindles, making print cloths. These mills have been running full time for a month or more. The Metacomet is also running full time.

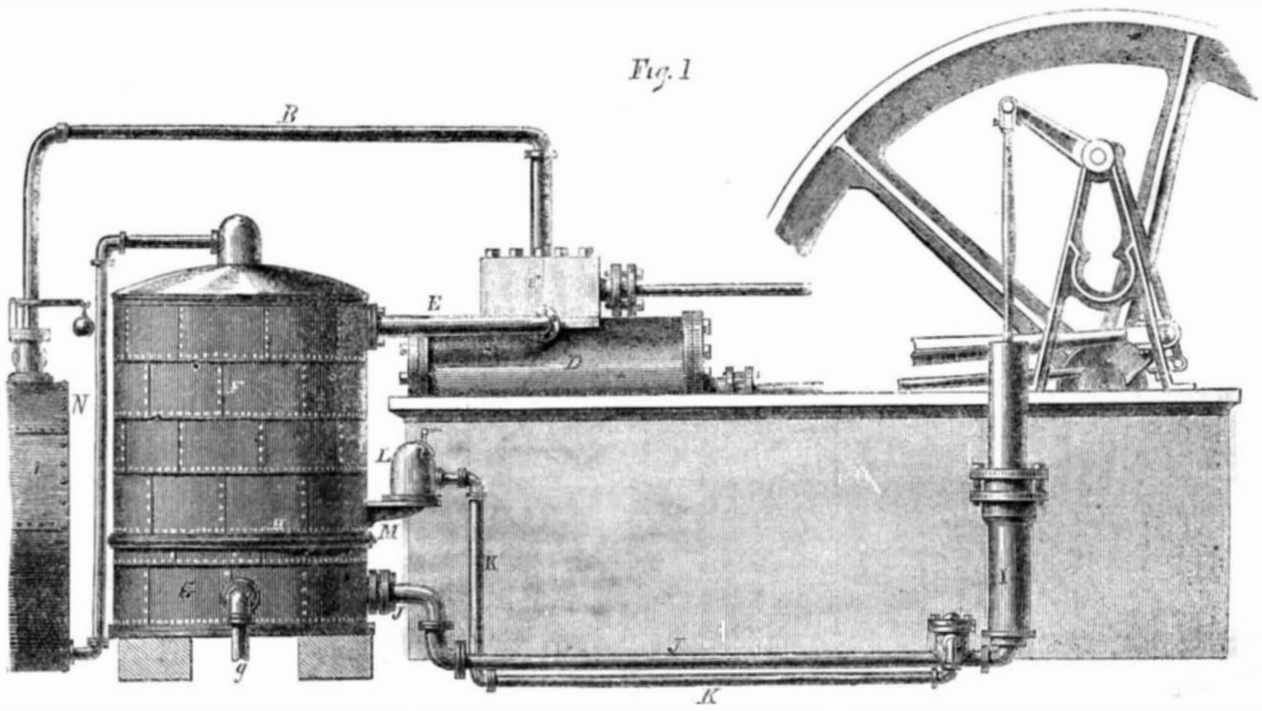
The iron works of Cresson, Stuart & Peterson, at Philadelphia, have renewed operations, employing 170 hands. The number of workmen will be increased in a few days to 325.

Small Pox and Vaccination.

Hall's *Journal of Health* has the following: "From extended and close observation, the following general deductions seem to be warranted:—First, Infantile vaccination is an almost perfect safeguard until the fourteenth year. Second, At the beginning of fourteen the system gradually loses its capability of resistance, until about twenty-one, when many persons become almost as liable to small pox as if they had not been vaccinated. Third, This liability remains in full force until about forty-two, when the susceptibility begins to decline, and continues for seven years to grow less and less, becoming extinct at about fifty—the period of life when the general revolution of the body begins to take place, during which the system yields to decay, or takes a new lease of life for two or three terms of seven years each. Fourth, The grand practical use to be made of these statements is: Let every youth be re-vaccinated on entering fourteen; let several attempts be made, so as to be certain of safety. As the malady is more likely to prevail in cities during the winter, special attention is invited to the subject at this time."

MILLER'S CONDENSER FOR STEAM ENGINES.

Fig. 1



On page 17, Vol. 8, of the SCIENTIFIC AMERICAN, we gave a full description and explanatory engravings of this apparatus, which was intended to be applied to sugar vacuum pans, or steam engines. Since that time, Mr. Miller has considerably improved on his apparatus, and on the 20th of May, 1856, he obtained a patent for these improvements, which are intended for the above uses, and give a more perfect and equable action to the arrangement, save fuel, and avoid the sudden expansion and contraction of the metal.

In our engravings, Fig. 1 represents the condenser as applied to a common engine, in which A is the boiler, sending steam through the pipe, B, into the steam chest, C, from whence it passes into the cylinder, D, and after having performed its work, the waste steam is exhausted through the exhaust pipe, E, into the cylindrical condenser, F. When it has arrived in F it passes down the inside of condensing tubes in its interior, (a section of which will be found in the volume above referred to,) and through a plate, H, dividing the condenser into two parts, into three or more worms in G. From the condenser, steam, air and gases are drawn by the up stroke of the pump, I, through the pipe, J, and at the down stroke of the pump, all the above are forced through the pipe, K, into the air chamber, L, the object of which is to afford a space in which air and other gases can accumulate, together with any oil or other impurities which are let off from time to time by the cock, *l*, while the pure water passes through the pipe, M, into the cylinder, F, outside the condensing tubes, where it acts as a condensing fluid for the waste steam that is being drawn through their interior. From F it is still forced outward through pipe N into the boiler, at only 70° Fah. less than the original heat of the steam in the boiler

Fig. 2 is a plan of the worm in its case, G, also showing the plan of the condensing tubes in F, above the plate, H, half of which is taken away, to show the worm. The condensing tubes are arranged as shown at *a*, the exhaust pipe, E, being turned round, to show the construction of the worm, around which, in G, a stream of any kind of cold water is continually flowing, entering *f* and going out at *g*. The steam entering at E, passes down the central main, *b*, and into the condensing tubes, *a*; from them the water flows into the central tube, *c*, which passes through plate, H, and leads to the four rows of worms, *d*, being now in the fluid state, and to the chamber, *e*, which is connected to J, leading to the pump. The arrangement of the four rows of worms will be understood by the section Fig. 3.

Fig. 2

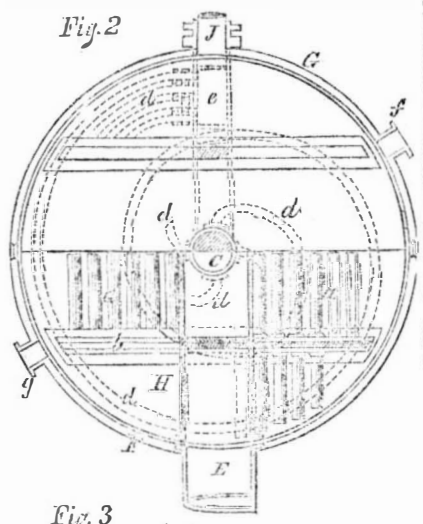
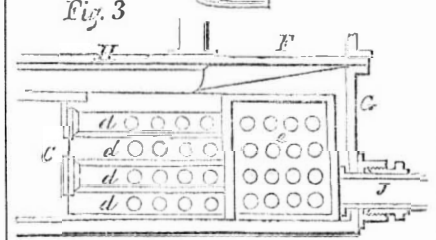


Fig. 3



As the condensing tubes or chambers of this condenser are not like a continuous pipe in other condensers, through which the steam rushes in a continuous torrent, the steam is suspended for an instant in the chambers, in its motion; and it is claimed that this method of action allows of its more rapid condensation by being pressed against the colder surface of the pipe, where the heat is carried off. While a vacuum is maintained in any part of the condenser in connection with the cylinder, as in the worm part under the tubular chamber, the condensing action may be as rapid as if the perfect vacuum chamber were nearer the cylinder, just in the same manner that a vacuum is maintained in the hot cylinder itself, while the condenser may be removed from it. In an inside condenser the temperature is maintained about 100° Fah.; and the feed water taken from it to supply the boiler cannot be above the same heat, because it would boil in the vacuum, and the pumps could not operate; but as the vacuum is maintained behind the pump in this condenser, the feed water from the worm passing through the upper part of the condensing chamber to the boiler, takes up some of the heat from the exhaust steam, all of which is saved and returned to the boiler.

The last patent of Mr. Miller does not claim any mechanical arrangement except the separation of the condenser into two parts, to act as a condenser for the steam, and for heating the pure water of condensation before entering the boiler. The lower part acts as a cooler to the water of condensation before entering the air pump, in order to produce a good vacuum.

Further information can be obtained by addressing James M. Miller, 92 Maiden Lane, New York, who has in his possession the highest testimonials from many eminent practical and theoretical authorities.

Drying Oil.

Old linseed oil, if mixed with protoborate of manganese in the proportions of an ounce to the gallon of oil, and kept in a close vessel for two days exposed to a heat of 212° Fah. in a steam bath, and frequently stirred during that time, makes a beautiful drying oil for paints. Dr. J. Hoffman, the eminent German chemist, says, "it becomes by this treatment of a clear greenish yellow color; remains thin even when cold, and zinc white paint mixed with it dries in twenty-four hours."

STEEL PENS.—The number of steel pens manufactured annually at the works of Joseph Gillott, Birmingham, England, exceeds 150 millions. With an experience of ten years in the use of these pens, we can say that they are unquestionably the best now in use.

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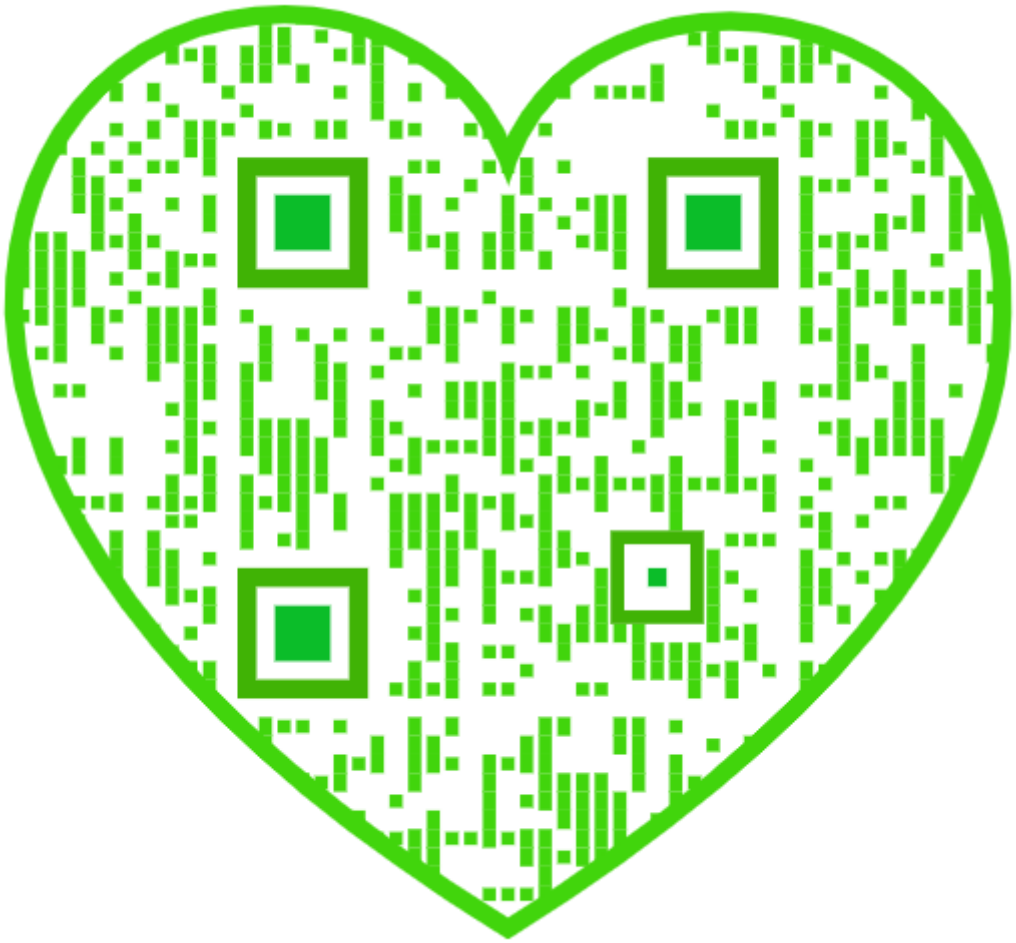

Patent Claims

Issued from the United States Patent Office

FOR THE WEEK ENDING JANUARY 12, 1858.

[Reported officially for the Scientific American.]

STAVE MACHINE—Leonard B. Averill of Barre, Vt. : I claim the arrangement and combination of the different parts of the machine, in the manner and for the purpose specified.

CARRIAGE TOPS—Newton Benedict, of Aurelius, N. Y. : I do not claim the extension front, F i i E f f j j and g g, which part is connected as a sliding part with the dash of the carriage.

But I claim the arrangement for operating the carriage bows, as described.

I claim the arms, C, connected with the main bow and with the shaft, A, in the manner and for the purpose set forth.

I also claim connecting the spring, D, with the carriage body, and causing it to act upon the shaft, A, in the manner and for the purpose set forth.

I also claim the combination and arrangement of the detention piece, d, with the catch lever, L, and its spring, S, whereby the shaft, A, is held at the proper point from rotating, as set forth.

I also claim the combined uses of the hinges, h, and loops, N, in the manner and for the purposes substantially as set forth.

CONNECTING THE BEVELING KNIVES IN CIRCULAR CUTTING BARREL-HEAD MACHINERY—William Bevard, of Muscatine, Iowa : I claim the described method of connecting the two bit-holders, M and N, so as to cause them to act as set forth.

REEFING SAILS—Joseph F. Boyd, of Charlestown, Mass. : I do not claim extending both the reef tackles and the reef band suspension lines of a topsail upward from the reef band to and through leading blocks or sheaves applied to the topsail yard.

Nor do I claim extending both the reef tackles and the reef band suspension lines of a topsail upward from the reef band to and through leading blocks or sheaves applied to the topsail yard, thence toward the topmast, and through other leading blocks or sheaves applied to the topsail yard, thence upward to and through leading blocks suspended from the topmast at or near its head and from thence to the deck of the vessel, as I am aware that such an arrangement and application of reef tackles and reefing lines is exhibited in the patent granted to William H. Foster, Sept. 5, 1854.

I claim my improved arrangement or application of the two reef tackles, B B, and the series of intermediate reefing lines, G G G, to the sail, the mast, and the topsail yard, the same consisting in carrying the two reef tackles of the outer edges of the sail upward through blocks at the topmast head, and thence downward to to the top or deck, without, in the meantime, leading them through any blocks, or their equivalents, by which, when said lines are pulled, they shall tend to lift the yard, in connection with arranging the intermediate reefing lines, so that they may extend upward from the reef band to and around sheaves in the topsail yard, and thence down to the top or deck, in manner specified, without, in the meantime, leading them up to and through a block or blocks appended to the topmast head.

NEEDLE GUNS—William Burghart, of Lawrence, Mass. : I am aware that darting needles with coiled springs, casings and carriers have been used before, for the purpose of loading and firing of guns.

I am also aware that breech-loading guns have been constructed, in which the drawing back and the elevating of the chambers is effected by means of lever and cam attachment. I therefore do not claim either of these devices as my invention.

Neither do I claim the operation of the spring, E, on the chamber, nor the construction of the principal casing, nor the construction of the darting-needle.

But I claim first, Elevating the chamber, drawing back the darting needle, and pressing back the coiled spring simultaneously, by one and the same movement of the lever, as described.

Second, The chain, g, with its pin, N, and also their combination with the cam, pivot and carrier, as described.

Third, Connecting the tubular casing, P, with the chamber, D, as described.

Fourth, The peculiar construction of the carrier in combination with the chain, the trigger, and the coiled spring casing, as described.

CONSTRUCTION OF BUREAUS AND WASHSTANDS—J. D. Burton, of Boston, Mass. : I claim the combination of the dovetail grooves and tenons, by means of which a bureau or washstand may be dismembered and again united or set up, in the particular order or sequence of parts as set forth, for the purpose specified.

STUMP EXTRACTORS—S. P. Castle, of Urbana, Ohio : I do not claim, broadly, and irrespective of construction and arrangement, the employment or use of a rack and pawls for extracting the stumps of trees, for this is a well-known mechanical device, and has been previously used for similar or analogous purposes.

But I claim the annular rack, E, placed within the socket, D, the lower end of which is fitted in the plate, C, on the cross-tree, B, so as to form a ball and socket joint, or connection therewith, the above parts being used in connection with the lifting and retaining pawls, J J F F, and the whole arranged as and for the purpose set forth.

[Full particulars of this invention will be found in another column.]

COTTON PRESS—Nathan Chapman, of Mystic River, Conn.: I claim the bar, T', and groove, T, as described, in combination with the follower, for the purpose of holding it in position while the press box is turned up to be filled, and to guide it in the press box, while it is pressing the ball.

SEWING MACHINES—David W. Clark, of Bridgeport, Conn. : I claim, first, Feeding the cloth or fabric in sewing machines by a movement of the table upon which the fabric is sustained, as described.

Second, Placing the loop in the position to receive the needle and thread by a movement of the table, as set forth.

Third, The employment of a wiper, J, arranged and operating in combination with the reciprocating table, substantially as shown, for the purpose of placing and holding the loop in position to receive the needle and thread.

LET-OFF MOTION OF POWER LOOMS—Stephen O. Colvin, of Coventry, R. I. : I disclaim the let-off motion of the power loom of Jonathan Knowles, patented April 30, 1850.

I claim the roll, F, or its equivalent, the springs, a a, and the clever, G, combined and operating substantially as described, to turn the ratchet wheel, I, or its equivalent, that moves the yarn beam, to let off the yarn only as required by the tension of the cloth and the warp yarn.

[This is a valuable improvement in looms, whereby a motion is given to the yarn beam exactly in accordance with the tension on the warp, so that it will never be too slack, or have too much strain upon it.]

CUSHIONS FOR BILLIARD TABLES—H. W. Collender, of New York City : I do not claim, in this application, the use of two rubbers of different densities, as this is covered by a former patent of mine.

Nor do I claim a steel strip, a whalebone strip, or any other substances which are used with a view of producing a cushion which has an elastic foundation and a comparatively solid face.

But I claim uniting the parts employed in forming combination billiard cushions, by placing the harder or more dense and less elastic substances in a mold, and allowing the melted rubber to flow against, around or into the harder or dense and less elastic substances, or causing the plastic rubber by pressure to unite with the same, substantially as and for the purposes set forth.

[We have noticed this invention in another portion of this journal.]

MACHINE FOR BLACKING BOOTS, SHOES, &c.—James M. Connel and John Connel, of Newark, Ohio : We do not claim rotary brushes as polishers, broadly considered, as such is not new.

But we claim the arrangement upon a rotary shaft of cleaning, blacking and polishing brushes, W W' W'', as described, when combined with the vertically adjustable blacking box, E, under the brush, W', as and for the purposes set forth.

HINGE EYE FOR SHUTTLES—John B. Cornell, of New York City : I am aware that hinge pivots have been cast into the winged portions of shutter hinges ; and I am also aware that the said pivots frequently work loose, and drop out of their places, when it is very difficult, if not impossible, to replace them.

I do not claim to be the inventor of the skeleton wing which forms a portion of my improved eye. Nor do I abstractly claim the chill-hardening of any portion of said hinge eye.

But I claim as a new manufacture the described improved hinge eye, the said hinge eye consisting of a chill-hardened eychole projection, cast in one piece, with a wing of suitable shape for its being built into a wall, as set forth.

GANG PLOWS—Myrtillus A. Cravath, of Loda, Ill. : I claim as new, and of my invention, first, The method substantially as described, of attaching the plows to the frame, whereby they are made capable of being thrown out of, and into, action, by partial rotation on their axes as exhibited.

Second, In combination with the above, the described arrangement of the wheels, E F G, whereby the chief weight of the implement devolves upon the wheels, E F, which run on the level bottom of the furrow.

Third, The described construction and arrangement of the jointed land side beam, A A', in combination with the lever, t, and rack, u, or equivalent devices, operating substantially as set forth.

HARNESS TRESS—Thomas Dempsey, of Newark, N. J. : I am aware of the application of springs of various kinds having been applied to riding saddles and harness saddles, and that pads have been made upon plates that were hinged to the terret nut and other parts of the tree, and that these plates have been held to their places by means of the terret and nut. Spiral springs have been used between the pad plate and nut, for the purpose of easing the horse. I disclaim either of the above applications.

Neither do I claim to be the inventor of the individual parts of the described harness tress.

But I claim the plates, B B', tongues, d and d', in combination with the nuts, k, and tree, A, in such a manner that I relieve the horse's back and not his side, by means substantially as described and shown in the drawings.

RAILROAD CAR SEATS—Jacob S. Denman, of Brooklyn, N. Y. : I claim attaching the back, C, at one end to the side, B, of the seat, by means of the arm, E, bar, F', with roller, K, attached, arm, G, and ratchet, H, arranged substantially as shown, and used in connection with the curved ledge, L, and pawls, I, the opposite end of the back being connected to the side, B', and properly guided by the arm, E', roller, d, and guide, N, or their equivalents, for the purpose set forth.

[These car seats have the back so connected with the sides that the back is not only rendered reversible, but also capable of being adjusted at any angle, so that the seat may be equally applicable for a comfortable day or night seat.]

SEWING MACHINES—Alexander Douglass, of New York City : I am aware that the application of conical chucks and springs adjusted by a set screw, have been before used for regulating the tension of the thread in sewing machines.

I am also aware that the inner chuck has been made movable upon the shaft, and a spring made to press upon that, to control the tension of the thread instead of upon the part of the chuck, upon the outer end of the shaft, which arrangement avoided the necessity of removing the spring each time that a fresh spool was put on, at the expense, however, of a considerable multiplication of parts. I therefore make no claim to the conical chuck, or broadly to its combination with springs, and an adjusting screw for regulating the tension of the thread.

The particular improvement which constitutes my invention, and which I claim, is the combination of the part, d, of the chuck, the spring, c, and the nut, f, when united as one piece, substantially as described, and for the purposes set forth.

PIANOFORTES—Spencer B. Driggs, of New York City: I do not claim generally the employment of two sound-boards in a pianoforte, as I am aware that they have been employed in two different ways, viz., in one mode both of them having been arranged within or above the bottom of the case, and in the other mode one having been employed in the usual position, and the other below the usual solid bottom of the instrument, and connected with the first-named one by a sound-post passing through a hole in the solid bottom of the case.

But I claim so applying a second sound-board in addition to the ordinary sound-board upon which the strings rest, that such additional sound-board shall constitute a bottom, and the only bottom, to the case, and produce results substantially as described.

[A description of this invention will be found on another page.]

BELL-HANGING—Nevingson G. DuBois, of Brooklyn, N. Y. : I do not claim the invention of the bell crank or the dovetail.

But I claim the improvement of bell cranks, by connecting the flat crank plate with the pillar crank plate, by means of a dovetail, and thereby make one crank answer for either, substantially as described.

MOWING MACHINES—Henry Fisher, of Canton, Ohio : I claim the arrangement and combination of a weighted lever, G, with a finger-bar pivoted to the frame of the machine, substantially as and for the purposes set forth.

VENTILATING PULPITS—James P. Herron, of Huntsville, Ohio : I am well aware that tubes, pipes and vents have been used for ventilating dwellings and other places, and such devices I do not claim.

But I claim the manner or mode described, with the inspiratory aura-duct formed as shown, and constructed of the mouth and jaw parts, c c d e e f, the receptacle, g g, the tongue valve, f i J J, in combination with the air-conducting tubes and pipes, a a a b b, or in any equivalent manner substantially the same.

BENDING METAL PLATES—David Howell, of Louisville, Ky. : I claim the use of a pair or series of rollers, R R', fitted to swinging frames of lever-like character, which are attached in an adjustable manner to a beam, K, or its equivalent, and operated by a double screw, S, or its equikalent, substantially as described, in combination with a rotating circular or annular bed or anvil, for the purpose set forth.

[This invention consists in the employment of a series of rollers operating in combination with a circular rotating bed or anvil. It is especially applicable to boiler heads and the like.]

MARINE SAFES—Josiah Foster, of Sandwich, Mass. : I do not claim applying air chambers to a vessel to buoy the same up when immersed in water.

Nor do I claim a marine safe or trunk made with an air-tight chamber applied to a receiving chamber, provided with a mouth and closing cap-plate.

But I claim, in the construction of a marine safe for preserving letters, money, or other articles, from shipwreck, the arrangement of the extra cap, F, with the air chambers, D and B, in connection with the safe, a, constructed and operating as and for the purpose described.

RAKING ATTACHMENT FOR HARVESTERS—James L. Fountain, of Rockford, Ill. : I claim the automatic attachments as described, consisting of the double cam wheel, E, vibrating lever, f, crooked arm, i, and loop, I, in combination with the cranks, O and H, pitman, G, and bent rock-shaft, g, the whole constructed and arranged as and for the purpose set forth.

SPRING GUNS—Albert Gemunder, of Springfield, Mass. : I claim first, The cylindrical cap, with its spiral wire for attaching the bait, and with its parts and adjustments substantially as described and shown.

Second, The use of the cylindrical cap in combination with the other parts of the gun, for the purpose of sustaining the bait, and of discharging the gun by means of the discharging rod and lever, substantially as described, and as shown.

HAY AND STRAW ELEVATOR—James H. Gill, of Mount Pleasant, Ohio : I do not confine myself to the precise method as described, of connecting the fender, as many other equivalent ways can be used to accomplish the same object.

I claim first, The combination of the inclined hoisting boom hinged to the supporting frame with the adjustable fender arranged as described for the purpose set forth.

Second, The combination of the hinged forked feet, e, with the sliding section of the fender, for the purpose described.

WHEEL VEHICLES—John Heiden, of New York City : I am aware that vehicles have previously been constructed so that their front and back wheels could move or turn simultaneously, as shown.

But I am not aware that the particular means employed for effecting the purpose as shown, has ever been employed. The devices hitherto employed for such purposes, so far as I am aware, have been complicated, their operation attended with considerable friction, and the movement of the wheels comparatively restricted, cross levers being employed to connect the two pairs of wheels.

I do not claim, broadly, connecting the front and back wheels of vehicles, so that both pairs of wheels may be "cramped" or turned simultaneously, for the purpose specified.

But I claim attaching the front and back wheels, J J G G, to their respective levers, K K L L M H H and I, which are pivoted respectively to the bars, A B, and connected by the rods, N N, substantially as and for the purpose set forth.

[This is described on another page.]

PLOTTING INSTRUMENT—Charles R. Iliff, of Falmouth, Ky. : I am fully aware that quadrants, graduated scales and verniers have been used for various purposes, consequently I do not claim the invention of such devices.

But I claim the construction of a portable pocket plotting instrument, embracing the graduated arc of a circle, or quadrant, the pointed graduated limbs and the sliding scale verniers substantially as described and for the purposes set forth.

VELOCIPEDES—Louis Kellner, of Brooklyn, N. Y. : I claim the treddles, E E, connected by the strip, H, or its equivalent, and used in connection with the guides, h, and board, G, arranged to operate as and for the purpose set forth.

I also claim the adjustable or yielding foot-pieces, d, attached to the treddles E E, substantially as described, for the purpose set forth.

I further claim, in connection with the treddles, E E, the auxiliary propelling devices formed of the levers, J J M M N N, arranged as described, and for the purpose set forth.

[For description of this invention, refer to another page.]

GRINDING MILLS—Burton W. Leonard, of Bridgeport, Conn. : I claim the arrangement for connecting the bail or carrier to the spindle; also the manner of hanging the bed-stone in the frame, by means of a universal joint or balance; also the manner of constructing the step and oil cups, as set forth and described.

CHAIN-MAKING MACHINE—William J. Lewis, of Pittsburgh, Pa. : I claim the arrangement of the fork, m, with its groove, n, and springs, o o, the levers, j j, with their notched dies, t t, and the forked spring lever, x, when operating in relation to each other and to the mandrel, E, substantially as described, whereby the bar composing the link is presented in an inclined position to the mandril, E, and closed or bent around the same spirally, and then discharged.

RAILROAD CAR BOXES—David Matthew, of Philadelphia, Pa. : I am well aware that it is common to use a slot in journal bearings for purposes in connection with lubrication, but they have no such effect as mine, and I do not wish to be mistaken as using a mere modification of such slot or crease, or as claiming any such arrangement or device.

But I claim the peculiar construction of journal box having a longitudinal slot or opening so proportioned to the relative vertical and horizontal strains as to produce the results substantially as set forth.

STEAM VALVE—Wm. R. Michener, of Marlborough, Ohio : I do not claim providing a valve with several ports to obtain a large area of opening by a small movement.

Nor do I claim exhausting through the back of a side valve.

But I claim the hollow circular or disciform valve, with its hollow stem and two series of ports, all arranged substantially as described.

[A description of this invention is on page 155.]

COTTON GINS—D. G. Olmstead, of Vicksburg, Miss. : I am aware that a mote brush has been used in the same relation to a stripping brush and saws which my screen brush occupies; therefore, I disclaim such a combination and arrangement irrespective of the kind of screen brush which I employ.

But I claim the ribs, I I, constructed, arranged and operating in connection with the saws, B B, substantially as described.

I also claim, in combination with the ribs, I I, and saws, B B, the revolving feeding screen, D, located beneath the feed box, G, and over the grate, Q, substantially in the manner and for the purposes specified.

I also claim the combination of the revolving screen brush, E, with the stripping brush, C, when said screen brush is constructed, operated and arranged in relation to the brush, C, and the saws, B, in the manner described and for the purpose specified.

VALVE ARRANGEMENT FOR STEAM ENGINES—N. S. C. Perkins, of Norwalk, Ohio : I claim the arrangement of the reciprocating driving lever, F, to the lap valve, when permanently geared with the piston rod, c, of the engine, so as to have a constant motion with it in a direct and positive manner as shown and described, lap controlling valve, G, permanently linked or geared thereto for like continuous operation, and independent, intermittent piston or pressure-driven main valve or valves, R R', for operation together relatively to each other and the engine piston, as specified.

METHOD OF LUBRICATING JOURNALS, &c., BY A PENDULUM VALVE ARRANGEMENT—J. B. Tom and Stephen D. Tucker, of New York City : We do not claim any peculiar mechanism for moving the chambered plug or cylinder, as that may be done in various ways, but what we claim as novel and useful is the chambered plug or cylinder moved by mechanism for rendering it automatic or self-operating or any or all modifications of the same, or their equivalents, for the purposes already set forth, substantially as described.

HORSE POWER MACHINE FOR CROSS-CUT SAWING—E. and J. Z. Perin, of Connersville, Ind. : We claim the combination of the saw frame, and slide piece, C, with the combination of devices communicating the motion of the horse-power, arranged and operating as described.

We also claim making the head shaft of the power movable vertically, and combining the same with roller m, rim, n, lever and lifting piece, for the purpose set forth.

ROTARY STEAM ENGINES—Lewis Peter, of Guadenhutten, Ohio : I claim the movable inclines, N, and springs, or their equivalents, to operate upon the sliding pistons of the engine, as described, and for the purpose set forth.

CUSHIONS FOR BILLIARD TABLES—Michael Phelan, (assignor to H. W. Collender,) of New York City : I claim, first, Giving the side and corner pocket iron of billiard tables the form of a semi-circle or regular concave as shown, instead of a form which is partly convex and partly concave, or similar to a cyma reverse ogee, as shown in Fig. 3, substantially as and for the purposes set forth.

Second, Having the cushions extended with a flat or rectilinear surface along their whole length, or of an equal thickness from pocket to pocket, and terminate at or slightly beyond the corner pockets in flat beveled ends, and at the side pockets in similar flat beveled ends, substantially as and for the purposes set forth.

[This is described on another page.]

EQUALIZING CARRIAGE SPRINGS—D. G. Rollin, of New York City : I do not therefor limit myself to the precise arrangement and construction set forth.

But I claim the equalizing apparatus for equalizing the strain upon the springs of carriages consisting of toggle joints, connecting rods, and equalizing lever, or their equivalents, constructed and operating substantially as set forth.

BUTTER WORKER—Justin M. Smith, of Lyme, Conn. : I do not claim, broadly, a rotating shaft placed within a case, and provided with arms irrespective of the construction and arrangement of the arms and dependent parts as shown, for such devices are in common use and may be seen in various churns and clothes washing machines.

But I claim the shaft, C, provided with arms or blades, g, g, i, i, arranged as shown, and placed within the inverted conical case, A, suspended within a proper framing, and having a perforated plate, D, fitted in its bottom, b, the whole being arranged substantially as and for the purpose set forth.

[For a further description of this, see another column.]

EXCAVATORS—J. D. Smith, of Panton, Vt. : I claim the employment of a flat circular platform, A, having one of its sides supported by vertical traveling wheels, C, placed below the platform and running upon the ground.

I also claim the employment of an adjustable discharging strip, G, when arranged and operating as shown.

[This is a combination of a plow and rotating platform, so arranged that the plow throws the earth into the platform, and it discharges on the side of the road simultaneously.]

CARPENTERS' RULES—L. C. Stephens, of Pine Meadow, Conn. : I do not claim any of the parts composing this instrument when received separately.

But I claim a measuring rule made as set forth, viz., having a movable blade and spirit level attached thereto as described, the whole constituting an instrument which may be used either as a rule, square, level, level plumb, indicator, &c.

[This is a useful rule, having all the parts named in the claim and capable of being applied to the many uses there set forth, none of which will in any way interfere with the other.]

SCISSORS SHARPENER—Andrew Steveley, of New Haven, Conn. : I claim an instrument or tool formed by securing a file or other cutting edge or edges at a proper angle variable or otherwise to the side of a plane surface so as to form a cheap and efficient sharpener for all sizes of shears and scissors for family use, when combined and fitted for use substantially as set forth.

CLOTHES' RACK—Chester Stone, of Ravenna, Ohio : I am aware that various kinds of folding frames or clothes' horses have been invented, and also hanging frames with jointed connection bars and tension racks, but these all differ widely from my invention, and I do not claim any of them.

But I claim the adjustable standards, A and A', in combination with the pin-jointed bars, D D, for the purpose of supporting clothes and rendering the clothes-horse capable of adjustment and of folding and unfolding, substantially in the manner and for the purposes set forth.

CREEPER—Leonhardt Witting, of Philadelphio, Pa. : I claim the spiked socket, B, with its spring lips, d, in combination with the spring catch, E, the whole being arranged substantially as set forth and for the purpose specified.

DEVICE FOR RETAINING IN PROPER POSITION THE SPLITTING KNIFE IN RATAN MACHINES—G. S. Colburn, (assignor to Cyrus Wakefield,) of South Reading, Mass. : I do not claim connecting a yielding feed roll to the splitting knife, so as to maintain midway between the feed rolls as in the patent of James Sawyer of April 7, 1857.

But I claim connecting the roll with the knife that it shall always remain parallel with the stationary roll, as set forth.

MATCH SAFE—J. B. Creemer, (assignor to himself and S. Dwight Humphrey,) of New York City : I claim the grooved cylinder, b, in combination with the hopper, C, and inclined slide, 3, to deliver one match at a time, substantially as specified.

WAGON BRAKES—S. A. Hough, of Oxford, Ga., assignor to himself and A. S. Hough, of Madison, Ga. : I do not claim applying the brake rubbers by the gravity of the load broadly considered, as such is not new.

But I claim as an improved construction of running gear for rendering the gravity of the load thus available.

The secondary frame, H I, secured to the front axle, in combination with the plates, e e, connecting the same with the main frame, the rollers, c c, between the frames, and the notches, m m, related to the connection of plates and frames, as described, when used with a slotted connection of coupling bar and rear axle.

ATTACHING SHAFTS AND POLES TO CARRIAGES—V. N. Mitchell (assignor to himself, H. A. Area, and C. N. White,) of Concord, N. C. : I claim attaching the shafts, E E, to the vedicle, substantially as shown, or in any equivalent way, so that said shafts may be turned, moved or folded towards and from each other and secured in either position, so as to form either shafts or a draught pole or tongue, and the vehicle thereby readily converted from a single to a two horse one and *vice versa*.

[A notice of this will be found on another page.]

GAS STOVES—Patrick Mihan (assignor to himself and Gilman Davis,) of Boston, Mass. : I am aware of the gas stove of Price, as patented in Great Britain in the year 1852.

I am also aware of the gas stove of Kimberley, as patented in Great Britain in the year 1853.

My stove differs essentially from these, for in each of the said stoves of Price and Kimberly, ordinary argand gas burners are used, whereas my stove is constructed to burn air and gas in mixture, and when they burn together on a wire gauze or perforated cap or disseminator, the volatile products of combustion differ materially from those resulting from the combustion of ordinary gas alone in air ; aldehyde and formic acid and other

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disagreeable vapors result from the combustion of the air and gas when mixed preparatory to being burned.

My stove combines with these vapors a perfumed vapor, in order to render them agreeable or to overcome their disagreeable effluvia.

I claim the combination of the perfuming chamber and apparatus with the air and gas burner and the chamber of combustion.

CHUTE FOR WATER WHEELS—C. B. Whitney, (assignor to Phillip Case,) of Ithaca, N. Y.; I claim the double helix or scroll or curved funnel-shaped flame or water cheet, when combined with the described bucket in the said water wheel.

RE-ISSUES.

SEWING MACHINES—I. M. Singer and Edward Clark, of New York City, assignees of Charles Morey and Joseph B. Johnson, of Boston, Mass. Patent dated Feb. 6, 1849. Re-issued June 27, 1854. Divided and again re-issued on two amended specifications Jan. 12, 1858: We claim the arrangement of the bed, eye-pointed needle, and hook, or equivalent looping apparatus, substantially as described, so that the bed shall be interposed between the hook or equivalent looping apparatus, and the material to be sewed to resist the puncturing operation of the needle to hold such material against the pull of the hook when drawing the thread to tighten the stitch, and to prevent the varying thickness of the material from producing any variation in the length of thread which is carried through by the needle as set forth.

And we also claim, in combination with the eye-pointed needle and hook, or equivalent looping apparatus, with the bed interposed between the material to be sewed and the hook, or its equivalent, a plate to make a self-adapting pressure on the material to be sewed in close proximity to the needle to hold it against the bed during the reciprocating motions of the needle, but which, while it so holds the material, shall be free to yield to the inequalities of such material, as it is drawn forward under it by any feeding apparatus, substantially as set forth.

SEWING MACHINES—Isaac M. Singer and Edward Clark, of New York City, assignees of Charles Morey and Joseph B. Johnson, of Boston, Mass. Patent dated February 6, 1849. Re-issued June 27, 1854. Divided and again re-issued on two amended specifications, January 12, 1858: We claim, in combination with an eye-pointed needle and a feeding apparatus for moving the cloth or other material to space the stitches, the employment of a plate or equivalent therefor, to make a self-adapting pressure on the material to be sewed in close proximity with the needle and in such relation to the needle and the bed or other surface which resists the puncturing operation of the needle, that the said yielding pressure shall act against the said material in the same direction as the needle in its puncturing operation, and shall hold such material smooth and steady while the needle is being withdrawn, and while the stitch is being drawn tight, the said yielding pressure being free to yield and adapt itself to the inequalities of such material as it is moved along by the feeding apparatus to space the stitches, substantially as described.

ADDITIONAL IMPROVEMENT.

MACHINE FOR SMOOTHING PLANED WOODEN SURFACES—E. D. Whitney, of Winchendon, Mass. Patent dated Aug. 11, 1857: I claim substituting the plane-iron a 3, for the scraper, n, in the block, U, in the manner and for the purpose substantially as set forth. [See an engraving of this invention on page 65, present volume.]

FILE CUTTING MACHINE—I. H. Collier, of Poughkeepsie, N. Y. Patent dated Feb. 24, 1857: I claim the application of a convex bed face or its equivalent, to the upper side of the cutting bed of file machines.

DESIGNS.

STOVES—David Hathaway (assignor to Fuller, Warren & Morrison), of Troy, N. Y. Four Patents.

STOVES—Peter A. Palmer, of Troy, N. Y.

TEA SERVICE—H. G. Reed (assignor to himself and C. E. Burton), of Taunton, Mass.

STOVES—N. S. Vedder and Ezra Ripley (assignors to L. Potter & Co.), of Troy, N. Y.

STOVES—N. S. Vedder and Wm. L. Sanderson (assignors to L. Potter & Co.), of Troy, N. Y.

STOVES—N. S. Vedder and Wm. L. Sanderson, of Troy, N. Y., assignors to George Warren, of Mechanicsville, N. Y.

Coffee-making.

MESSRS. EDITORS—If it is taken into consideration that, in almost every large city on the European continent, fortunes are realized in a few years by the proprietors of such coffee-houses as are distinguished for the excellence of the beverage supplied therein, it is surprising that there does not exist even one celebrated coffee-house in this city, the great metropolis of the Western World. In Russia, there are houses for the sale of infusions of tea instead of coffee; but there, as in this country, coffee may be obtained in confectioner's shops.

It is a fact that most of those who daily make infusions of coffee are profoundly ignorant of the philosophy of cooking it, or rather, of the chemical principles on which its preparation is based. If it is asserted by the same, that, as it is the manifest destiny of all men to die, this final result will as surely and inevitably occur, whether we drink good or bad coffee during our short lifetime, I would reply that this beverage has enlivening and life-sustaining properties, and when taken in moderation, is beneficial to the health of man. Attention ought, therefore, to be given to its preparation, for which the following rules will prove useful.

Coffee ought to be roasted and ground daily in every family where it is used; for the purchase of it in a ground state not only facilitates adulterations to a great extent, but causes a loss of the best part of it, the volatile oils, which have evaporated long before it is bought. In almost every European family, the roasting of coffee is performed in little drums; and great care is exercised to produce the right color. If too little roasted, it is light brown (as it is sold here); the volatile oils are not entirely formed. If too much roasted, the oils are volatized during the process. The roasted berries are then kept in glass bottles, closely corked, until the moment when a beverage is desired; a proper quantity is then ground and infused for use.

The best apparatus for extracting the whole strength of the coffee consists in a peculiarly-formed kettle, having a perforated plate on its top; the coffee is placed on this plate, boiling water is poured upon it, and the essence of the berry is thus obtained by hydraulic pressure. In some large European coffee-houses, a number of small filtering kettles are used in preference to one large one, in order to supply fresh infusions of coffee at all times throughout the day; the flavor of fresh coffee being much superior to that which has been long kept in the kettle.

Water, of course, affects the taste of coffee. Pure rain water is the best for the purpose of coffee-making; but the Croton, or other similar water, does not so greatly deteriorate the flavor of coffee as do the improper degrees of roasting, or the time and manner of grinding and cooking this healthy and invigorating beverage. L. R. BREISACH.

New York, January, 1858.

The Camels.

There is, after all, a fair prospect of the Arabian camel becoming a regularly naturalized and valuable American citizen. Our government, on two separate occasions, has imported cargoes of camels, in order, if possible, to acclimatize them for long journeys over the dreary plains of the south-west. Lieut. Beale, formerly of the navy, and superintendent of the construction of the new military road from Texas to the Colorado river in California, has made the exploration, occupying forty-eight days, and located an excellent wagon road, the whole distance. On this exploration the camel was the tried animal, and it seems it surpassed his expectations for patience, endurance and fitness for American desert travel. He says respecting it:—

"Unsupported by the testimony of every man of my party, I should be unwilling to state all that I have seen them do. Starting with a full determination that the experiment should be no half-way one, I have subjected them to trials which no other animal could possibly have endured, and yet I have arrived here not only without the loss of a camel, but they are admitted, by those who saw them in Texas, to be in as good condition to-day as when we left San Antonio. In all our lateral explorations, they have carried water sometimes for more than a week, for the mules used by the men, the camels never even receiving a bucketful each.

"They have traversed patiently with heavy packs on these explorations, countries covered with the sharpest volcanic rock, and yet their feet, to this hour, have evinced no symptom of tenderness or injury. With heavy packs they have crossed mountains, ascended and descended precipitous places, where an unloaded mule found it difficult to pass, even with the assistance of the rider dismounted, and carefully picking its way. I think it would be within bounds to say that in these various lateral explorations they have traversed nearly double the distance passed over by our mules and wagons."

The Lamas.

Apropos to the attempt to naturalize the camel in the United States, efforts have just commenced to acclimatize the lama—a native of South America—the animal from which the famous alpaca wool is obtained. Forty-two of these animals recently arrived in this city, being imported from Escuador by way of Aspinwall. They are designed, we understand, for the Eastern States, in the hope that they may become inured to the climate, and take the place of sheep, in some cases, on account of their wool, which is very valuable. In their native regions they are shorn twice every year, and yield, at each shearing, about sixteen pounds—four times the quantity obtained from the common sheep, which are shorn only once annually. They are pretty large animals, weighing from 200 to 300 lbs., and are used as beasts of burden in South America—they are the American camel. They live on coarse herbage in the region of the Andes mountains; and it is believed they will prosper in the hilly portions of Vermont, Maine and New Hampshire. If not, we think they can be acclimatized in the mountainous regions of Virginia, North Carolina and Tennessee.

We really hope that this laudable effort to introduce the lama into our country will prove successful, as its flesh is said to be equal to the best venison, while its wool is now extensively employed in manufacturing very beautiful fabrics. We also hope that if one effort fails, others will be made, as it is reasonable to suppose that, with our great variety of climate and soil, this useful animal can be acclimated in some part of our country.

Submarine Operations at Sevastopol.

A paragraph has been going the rounds of the papers, in which it is stated that the American contractors to raise the sunken Russian fleet at Sevastopol have given up the project in disgust, and have returned to Constantinople on their way home. It is stated that the sunken vessels have become so deeply imbedded in the mud and sand brought down by the river into the bay that it is impossible to raise them. On the other hand, the Boston *Transcript* states that the Marine Exploring Company of Philadelphia, which has the contract for raising these vessels, is under heavy bonds to the Russian government to perform the work. The *Transcript* also asserts that this company, instead of running away from Sevastopol in disgust, has been very successful, and employ several hundred men in the operations. It admits, however, that the Boston Relief and Submarine Company, also at Sevastopol, had ceased operations, and withdrawn all their vessels. This explains the whole matter. Two American submarine exploring companies went to Sevastopol; one of them has failed, the other has been successful.

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims on another page:—

STUMP EXTRACTOR.—This machine consists of a cylindrical rack fitted within a proper socket, and used in connection with lifting and retaining pawls, all being arranged in a suitable framing, so that a strong, durable and efficient machine is obtained, and one that will transmit, with the least possible friction, all the power applied to it. It is the invention of S. P. Castle, Urbana, Ohio.

ATTACHING SHAFTS TO VEHICLES.—This improvement consists in so applying or attaching the shafts to a vehicle that they may be adjusted to receive a single horse as usual, and also capable of being adjusted to form a draft pole for a pair of horses without removing them; thus enabling a vehicle to be changed from a single to a double horse one in a short space of time. It is the invention of V. N. Mitchell, of Concord, N. C., assignor to himself, H. A. Area and C. N. White, of the same place.

IMPROVED CHURN.—Justin M. Smith, of Lyme, Conn., has invented an improved churn, which consists in having a series of oblique arms attached to a vertical rotating shaft, which is fitted within an inverted conical case provided with a perforated plate at its bottom. The parts are so arranged that the butter, without being subjected to an undue action, will, as the shaft is rotated, have all the buttermilk expressed from it.

STEAM VALVE.—This improved valve is of the circular or disk-form kind, and is operated with a reciprocating circular motion. Its novelty consists in the arrangement of its parts and passages for the induction and eduction of the steam, whereby a large amount of opening is obtained with a small amount of motion, and it is relieved, to a great extent, from the pressure of the steam on its back side. It was invented by Wm. R. Michener, of Marlborough, Ohio.

PIANOFORTES.—This invention consists in so applying a second sounding-board to a pianoforte, in addition to the usual sounding-board upon which the strings rest, that the second sounding-board shall form the bottom of the piano case, making the case like that of an immense violin, increasing the volume of sound through the medium of the sounding-boards, which are placed at such a distance as not to interfere with each other. It is the invention of S. B. Driggs, of New York City.

WHEEL VEHICLES.—This is an improvement in wheel vehicles, whereby they may be turned in a small compass. The invention consists in having the front and back wheels attached to levers, and also having these levers connected by rods, in such a way that when the shafts or line of draft is turned, the front and back wheels are turned simultaneously in opposite directions, and the desired object is obtained. John Heiden, of New York City, is the inventor.

VELOCIPEDES.—An improvement in these useful vehicles of transport has been invented by Louis Kellner, of Brooklyn, N. Y., which consists in the use of treddles in connection with a bearing-board, so arranged that the occupant may propel the vehicle along by operating the treddles, and a greater or less speed can be obtained, according to the physical strength of the operator. Levers are also used in connection with the treddles, when an increase of propelling power is required. Instead of, as in the ordinary velocipedes, transmitting the force of the treddle to a driving wheel, the power is here directly applied from the treddle to the ground, thus saving a vast amount of friction.

BILLIARD CUSHIONS.—H. W. Collender, of 53 Ann street, this city, has patented an improvement in billiard cushions, which consists in uniting the comparatively solid strip of rubber, gutta percha, steel or whalebone, to the elastic or spring foundation, by placing the comparatively solid substances in a mold, and allowing the melted rubber to flow against, or the plastic rubber to be pressed around, or in contact with the same, so that it shall surround the edges, back, and ends of the same, and thus securely confine it, without the necessity of using cement, nails, hinges, or any cloth covering to retain it. We regard this as a very valuable improvement in the manufacture of the cushion, and like former inventions of Mr. Collender in this branch of the arts, it commends itself to the public.

A MODEL BILLIARD TABLE.—The improvements in billiard tables patented this week to Mr. Phelan, of this city, are worthy of notice. The first feature of novelty is the extension of the cushions in a right line from pocket to pocket, instead of giving them a curved form of about 2½ inches near each pocket, and thus taking away full thirty inches of playing surface on each table. The second feature is the form of the pocket-iron, whereby the ball is caused to glide into the pocket with unerring certainty, and without banging upon and wearing away the leather covering of the pocket-irons. A table furnished with these improvements will very seldom require to have its pocket-irons re-covered with leather, and thus a great saving will be effected; the ivory balls will also be saved from deterioration, as they will not come in contact with the exposed metal. The player can always calculate, with certainty, the effect that the ball will produce on the reflective angle, as the surface of the cushion is uniform from pocket to pocket; and on the one table he can have increased facilities for the execution of the "cannon shots," with even greater advantages for the performance of the "hazard shots." We are informed that these improvements, in connection with Mr. Phelan's cushion, are being generally adopted throughout the country. An engraving of this improvement will soon appear in our columns.

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New Inventions.

Separating Osmium-Iridium from Gold.

This metal is more dense than gold. The method adopted for its separation (at the St. Petersburg Mint) from Russia gold is to alloy it with three parts of silver, melt the metal in large black lead crucibles, and keep them at rest for some time, during which the iridium granules sink to the bottom. The upper portion of the gold is then dipped out to within an inch of the bottom of the crucible, and run into ingots. The small portion of the metal left at the bottom contains the greater portion of the iridium, which is separated in the "wet way," by nitro-hydrochloric acid, which dissolves the gold, but does not act on the iridium granules. Some of our California gold contains iridium.

Destroying the Nerves of Teeth by Electricity.

An interesting paper on this subject was recently read before the College of Dentists in London, by T. Harding, M. D., in which he described his success in cauterizing the pulp of decayed teeth by the use of a current of electricity. He employs for this purpose a compound Smee's battery composed of six pairs of zinc and platinized silver plates in cells excited by dilute sulphuric acid. The conducting wires, which run from the opposite end plates and form the circuit, terminate in tips of fine platinum wire formed into a loop. The sides of this loop are brought parallel, not touching, but near together, then introduced into the cavity of the tooth to be operated upon. A handle is then touched which closes the circuit, and the electric current flows along the wire, raising the platinum tips to a white heat, which soon destroys the pulp of the tooth. The white light of the platinum points illumines the cavity, and allows the operator to perceive what he is doing. The operation is associated with little pain, and should precede the filling of decayed teeth, which cause pain from exposure of the pulp. This process cures severe ordinary toothache, and it may be used with decided advantage in almost every case of tooth disease, if carefully performed. Dr. Harding also stated that it was especially applicable to relieve neuralgia of the face dependent upon affected teeth. This form of teeth disease is very prevalent in our country, and causes the most excruciating pain. If this simple operation recommended by Dr. H. affords relief, it should at once be adopted by all our dentists.

This method of cauterizing diseased teeth has been practised for six years by the author of the paper referred to, and in more than five thousand cases without the occurrence of a single accident worth naming.

The President of the College, on the conclusion of reading the paper by Dr. H,, took opposite views as to the efficacy of cauterizing teeth by this process. He stated that he had tried it, without meeting with much success. He recommended a sedative for toothache made of three grains of morphia, mixed with two drachms of a saturated solution of camphor, either in chloroform or alcohol. He had found this to be an excellent dressing in all cases of exposed pulp or sensitive dentine.

Improved Harvester.

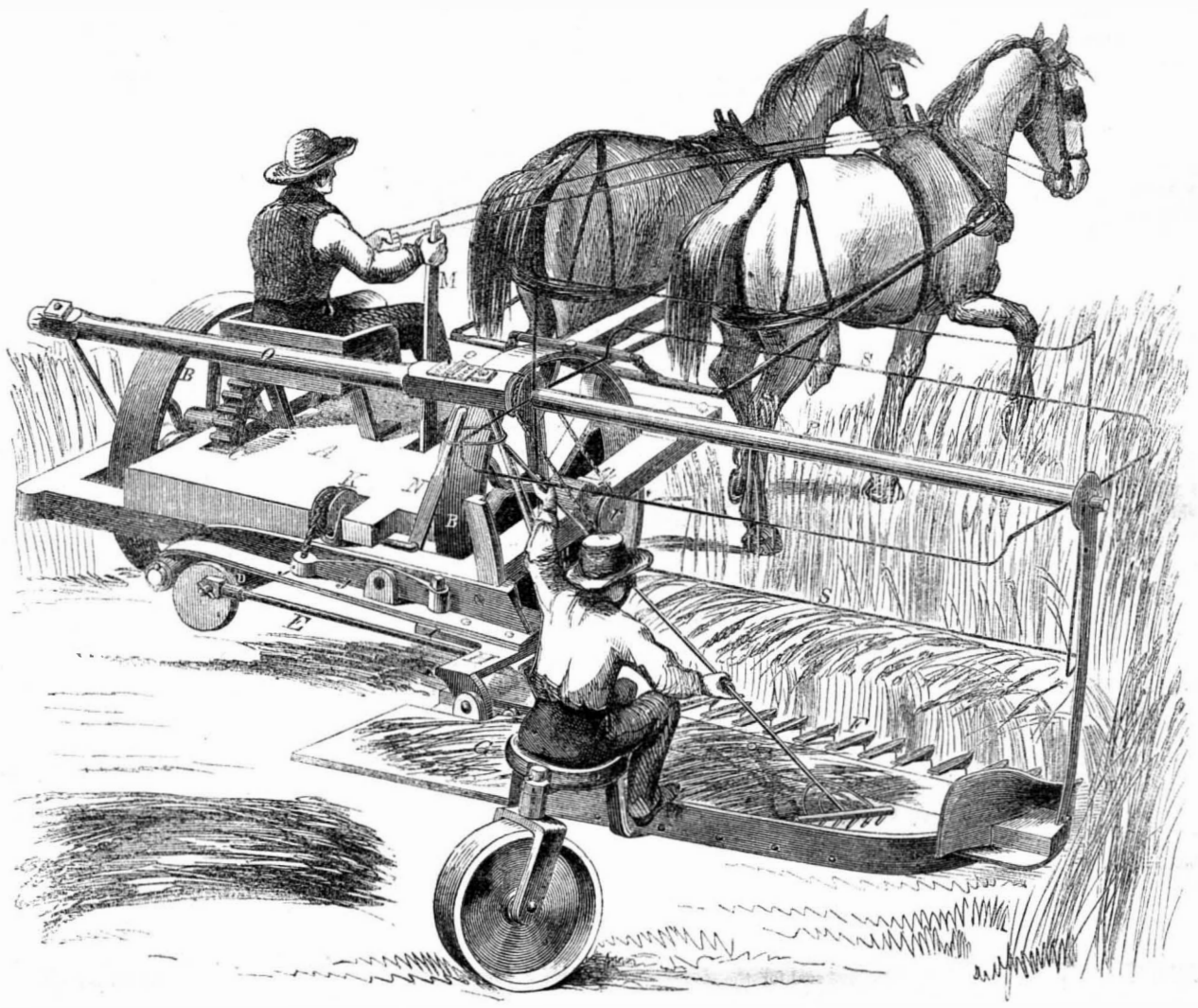
The number of improvements which are daily being made in all kinds of agricultural implements and machinery, demonstrate the fact that inventive genius has taken and is taking the right direction towards leaving its indelible mark on the age in which it flourishes, because each useful addition given, or new aid afforded, towards the tilling of the soil, and making Mother Earth give us her utmost, is a national, as well as a personal benefit. In no one agricultural implement has more progress been manifested than in the harvester; from being a very rude combination of a pair of shears on a wheel, guided and moved by hand, it has quickly risen to the perfect machine represented in our illustration, which is a perspective view of one at work, and which we will now describe.

A is the platform, on which is raised the driver's seat, and to which the horses are attached by a pole. B is a wheel, connected by ratchet teeth to the axle of the wheel, C, as is also the other large wheel, both of them supporting the machine, and giving motion when drawn forward, to C. The ratchet teeth are so cut that when the machine is backed, no motion is communicated to C; and when it is desirable to draw the harvester anywhere, and the cutters are not required to be operated, the ratchets can be thrown out of gear by the lever, N. C gives motion to bevel gear under the platform, which rotates the wheel, D, and consequently gives the necessary vibratory motion to the cutters, F, by means of the shaft, E.

The cutters are mounted on a platform, G, on the back of which is the raker's seat, the platform being well and strongly hinged to the casting, H, which is firmly secured to A. G has a tongue, or piece of iron, I, projecting from it, on which the screw in the end of the lever, J, can exert pressure, by means of the cord, *j*, passing over the pulley, K, and worked by the lever, M, so that the platform, G, and cutters, F, can be raised or depressed to overcome any obstacle which they may encounter. On the end of one of the wheels, B, is a small pulley, *r*, around which passes the endless band, *q*, that gives motion to the reel, S, the arms of which are of the peculiar and advantageous shape shown in the engraving. This reel revolves around the axle, P, hinged at *o* to a corresponding stretcher or tyer, O, to allow of it being elevated or depressed with the cutter platform.

There can be little doubt that this is one of the best among the numerous harvesters. It is the invention of Hosea Willard and Robert Ross, of Vergennes, Vt., who will furnish any further information. It was patented November 3, 1857.

WILLARD & ROSS'S IMPROVED HARVESTER.



Lime for Potatoes.

A correspondent—Smith Groom, of Troy, N. Y.—informs us, that his experience in the culture of potatoes has convinced him that about a handful of dry slacked lime placed in each hill tends to prevent the potato rot. The lime, he states, brings the potatoes earlier to maturity, and imparts to them a vigor which resists the attacks of the disease. An experiment with lime can be conducted by any of our farmers at a small expense, and if it does not prevent the potato rot, the lime will certainly enrich the soil for other crops.

Self-Acting Indicator Bee Stand.

Numerous as are the contrivances for facilitating the study of the honey bee, we have not one which enables the bee-keeper from day to day to note the progress of his hive. In order to know exactly the diurnal accumulation of sweetness in the shape of honey, a simple and cheap contrivance has been devised by Shirley Hibberd, of Tottenham, England, and which the accompanying engraving represents.

Construct a pedestal for a hive on the plan shown in the diagram. Let it be formed telescope fashion: a turned pillar, A, working like a piston in a brass or copper cylinder, B. Inside B, and beneath the pillar, A, is a spiral spring, C, of brass or steel wire, and on this spring the pillar, A, rests. In the front of the cylinder, B, are two open slits, and between them an index marked in accordance with the strength of the spring. The right hand slit is simply a groove in which a finger, *c*, works freely up and down when moved by the hand, and a screw fixes it in any position. The

Fig. 1

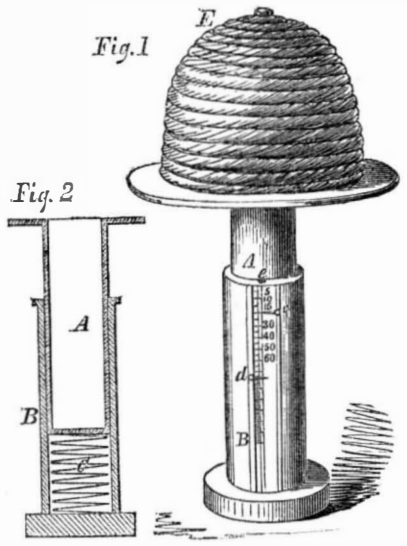


Fig. 2

finger, *d*, is attached to the base of the pillar, and the slit in which it works is quite open; so that as A presses down the spiral spring, the finger, *d*, marks the gross weight of the hive, hive-board, sufers, bees and honey. At *e* a thumb screw passes through the rim of the cylinder, B, to press against the pillar, A, and retain it in its position. This is to prevent any jerking up of the hive on the removal of a cup or sufer. The use of such a contrivance can need but little explanation. The hive, with its swarm and floor-board is placed upon the pillar, and its gross weight is immediately marked by the finger, *d*. Suppose the gross weight to be ten pounds, fix the finger, *c*, at ten pounds, the finger, *d*, will the next evening mark the increase in the twenty-four hours; if the sufer is put on, its gross weight should be also marked by *c*, and whenever you wish to know the amount of honey in the hive, just deduct the weight marked by *c* from that marked by *d*, and the remainder is the weight required.

Plane for California.

On a former page, (109) this volume, we directed attention to a letter received from California, in which it was stated that common wooden planes soon got out of order in that dry climate, and that iron planes would probably answer a better purpose. In answer to this, Mr. J. F. Palmer, of Auburn, N. Y., informs us that from his experience he believes that his plane is perfectly adapted to the dry climate of California, and not liable to get out of order. This plane is illustrated and described on page 392, Vol. 12, Scientific American.

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Scientific American.

NEW YORK, JANUARY 23, 1858.

Patent Committees—Their Importance.

In each House of Congress there is annually appointed a regular "Committee of Patents," the specific duties of which are of great public importance. To these committees are referred all questions relating to science and art which require experiment and investigation; also, all petitions for appropriations to test new and important discoveries of reputed national benefit—such, for instance, as the first electric telegraph line, from Washington to Baltimore, costing thirty thousand dollars—likewise the case for which an appropriation of a similar amount was made a few years since to test electro-magnetic engines. To them are also referred petitions for compensation in cases wherein government officials have used patented inventions or discoveries, such as etherization by surgeons in the naval and military hospitals, for which one hundred thousand dollars was wrongfully proposed to be granted. Petitions for the extension of expired patents are also referred to them, some of which, if secured, may attain to the value of millions of dollars—such as Wood's patent for the old cast iron plow, which, had it been extended by Congress, would have been the means of unjustly taxing every farmer in our country—the Woodworth patent—Colt's pistol—Hayward's india-rubber scheme, and McCormick's reaper, are similar and well-known cases. All questions relating to the Patent laws, and such like matters, are also referred to them.

Owing to the nature of the business belonging to these committees, it is well known that very large sums of money are frequently at stake, ready to be employed in any manner most advantageous to the interest of the parties who have claims to present. It is well known that members of these committees, in former times, have not been above the insidious approach of the "almighty dollar;" it is therefore highly necessary that these committees should be composed of men above pecuniary and business influences of every kind and character relating to questions brought under their official cognizance. If they are not thus independent, it is easy to perceive that very pernicious measures may be fastened upon the community through their actions, and that the people's money may be given away to charlatans and plotters. The Senators and Representatives appointed on such committees should have characters above suspicion. This is the first qualification to be sought after; the next is the possession of zeal for the promotion of science and art, and warm sympathies towards inventors.

Our attention has been specially directed to this subject by the recent debate which took place in the Senate on the appointment of its Committee on Patents. Senator Hamblin, in objecting to its character, said:—"I find a majority of them constituted of Southern Senators. They are worthy men. I make no complaint of the Senators who occupy the positions on these committees; but it is to their sectional cast that I object, and the purposes which we have a right to believe are designed to flow from that organization. That committee is composed of three gentlemen from the Southern and two from the Northern States, giving to that section the control of all its action. While I know, if there is an honest man in this body who will devote his energies honestly to its purpose, I say cheerfully it is the worthy Senator from South Carolina (Mr. Evans); still when we look at the fact, that of the inventive genius and enterprise of the country, more than four-fifths, if not nine-tenths, come from another section of the Union, I ask, if it were not right, that they might reasonably have expected men who feel a local and personal, as well as a national, interest in that department of our government in what relates to arts and inventive genius." Senator Gwin opposed such views, not on party or sectional considerations, but on the justness of the appointments. He said:—"What is more just than that it should be composed of men of legal attainments, who in examining important questions connected with patents, will be disinterested so far as their constituents are concerned in passing impartially on these great questions? We had reference to that in putting gentlemen on that committee, from whose States inventions rarely come up, that they may be impartial judges of the questions under consideration."

The two views here presented by these Senators are worthy of notice. Senator Gwin has stated a fact which is honorable to those who had the appointment of this committee—their ruling motive being the fitness of the Senators for their peculiar duties. We are glad of this; because such motives do not always prevail in the selection of persons for such duties.

The committee consists of Senators Reid, of North Carolina (chairman); Evans, of South Carolina; Yulee, of Florida; Simmons, of Rhode Island, and Trumbull, of Illinois. One idea appears to us to have been prominent in the minds of those who sought their appointment, namely, the quality to judge impartially of the cases that may be brought before them respecting the unjust extension of certain expired patents under the management of certain scheming parties, who are now seeking to fasten them once more upon the public. We are happy that this was the first—because it is the most important question at this time—which was considered in the selection of this committee, and we have a guarantee in the character of the Senators appointed, that such schemes will not meet with any favor whatever. But do these gentlemen possess the proper feelings in regard to the progress of the arts—the great object for which Patent laws were made, in order to encourage and incite inventors to make improvements. It is true, as Senator Hamblin has stated, that the great mass of our inventions come from the Northern States, and it is natural to conclude that members from the North may have more zeal for the interests of inventors and the advancement of the arts; but we have always taken the position that as it relates to inventors, the whole world should be considered as one republic, and that our laws should be framed to meet this view without discrimination, and we would direct the attention of the committee to this point. These laws require amendment in relation to the reduction of fees to foreign inventors, as recommended by the Secretary of the Interior, and if the committee exhibits zeal in the performance of their duties, these laws will certainly be amended at this session.

There are other features of our Patent laws also requiring amendment, and to these we will advert at some future time. So far as the committees of the Senate and House of Representatives are concerned, we have the fullest confidence in their ability and integrity; still we caution them to look sharp after all applications for extensions of patents. There is mischief at the bottom of many of them.

The Tides.

The tides of the ocean have been a subject of wonder and a puzzle to those who have not investigated their cause. It is related of the soldiers of Alexander the Great, who were natives of the Mediterranean shores, that when they reached the confines of the Indian Ocean and saw its waters rolling up to a great hight, and then flowing back, twice every day, that they became alarmed, and attributed the phenomena to a special interposition of the deities of the country which they had invaded. Various remarkable theories have been advanced regarding the causes of the tides. Kepler, the celebrated German astronomer, believed that the earth was a real living animal, that the tides were due to its respirations, and that men and beasts were like insects feeding on its back. The tides have also been attributed to the waters of the ocean running in and out through some great hole at each pole communicating by a subterranean passage through the earth; and the Maelstrom—now a myth—that whirlpool on the coast of Norway, has been suggested as an opening into this supposed underground canal. We would not be very much surprised if some speculative being would yet discover that the very cold water found by Lieut. Berryman, as described in our last number, was melted ice that had come from the Arctic regions through this inner passage, and had oozed out near Bermuda. If the tides were due to the breathings of a great monster, of course, we can suppose that it just respired twice every twenty-four hours, but this never could account for the variations of the tides. The hole through the earth also cannot account for these variations, as this theory must involve the necessity of a regular ocean current running round and round, not ebbing and flowing.

Many persons—according to letters sometimes received by us—still seem to be much perplexed with the phenomena of the tides. They cannot understand why they are higher at one time than another, nor why they rise to the hight of sixty feet in the Bay of Fundy; forty feet in the ports of Bristol, England, and St. Malo, France, and only rise to a few feet in hight in New York and other places, while they are scarcely perceptible in the Baltic and other seas. Descartes was the first philosopher who advanced the theory that the tides were due to the influence of the moon, but Newton was the first who worked out the problem, and discovered the true cause. Descartes believed that the moon acted on the waters of the ocean by pressure; Newton demonstrated that it acted upon the ocean by attraction: that instead of pressing the waters, it rolled them up directly under it, and also at its antipodes at the same time, thus producing the two tides every day. The tides are caused by the attraction of both the moon and the sun. If this earth had no moon, the attraction of the sun would produce two tides every day, but their ebb and flow would take place at the same hours regularly, not varying as they do now; these tides would also be much smaller than those of the moon. Although the mass of the sun is far greater than that of the moon, and although attraction is in proportion to the mass, yet it is also inversely as the square of the distance. As the sun, therefore, is four hundred times further distant than the moon, the attraction of the waters of the sea towards the sun is found to be about three times less than that of the moon; the tides produced by the sun would therefore be three times less than those of the moon. There are really two ocean tides, the *lunar* and *solar*, but the latter is absorbed by the former, which is wholly observable in respect to time, the solar only as it influences the hight of the tidal wave. That caused by the moon is three times greater than that of the sun, and it follows the moon's motion around the earth, rising and falling every twelve hours, and each succeeding tide later by three quarters of an hour than the preceding one, exactly in accordance with the positions of the moon, or as it is commonly called, "its rising and setting."

Sometimes there are very low and at other times very high tides—that is, their hight is not uniform. This is caused by the positions of the sun and moon relative to the earth. Thus, as at the time of the new moon, the sun and the moon being in the same parts of the heavens—the tides produced in the ocean are then the highest, because they are equal to the sum of the two tides—lunar and solar. This should also take place at the time of the full moon when our satellite is opposite the sun, the attractive force being equal and opposite, in producing the tidal wave. This is found to be true. The tides are greater at new and full moon than at the first and last quarters, as during the latter periods the attraction of the sun, not acting in unison with that of the moon, tends to lower the tides.

Reasoning from this data, it will naturally be inferred that when the sun and moon are equally distant from the two poles of the globe, such as at the times of the equinoxes in March and September, the tides would be greatest. This is also found to be the case, thus demonstrating beyond all doubt that the flux and reflux of the sea are due to the attraction of the sun and moon upon the waters of the ocean. The difference in the hight of the tides at various places is due to the peculiar formation of sea coasts. They are very high in the Bay of Fundy, because an immense quantity of water is piled into a wide-mouthed narrow space, in the same manner that a certain quantity of water will rise higher in a narrow than in a wide channel. Some have advanced the popular belief against the lunar influence causing tides, namely, that the Mediterranean is a tideless sea. This is not strictly true. The ocean tides, owing to the narrow passage into the Mediterranean at Gibraltar, scarcely affect this sea, but for all this there are regular tides observable at some places. At Vienna they sometimes rise to two feet, and in the Faro of Messina to twenty inches.

The Warm Weather.

Thus far, we have had the warmest and most pleasant winter weather within the memory of man. The fields are green, the cattle browse in the meadows, the frogs croak in the swamps, and the farmers plow in the fields—it has been May, not common December and January weather. On the 9th of this month, 1856, the thermometer stood at 5° below zero, in New York; on the 24th, 1857, it was 14° below zero, and in some parts of the State it was 30° and 40°. The lakes, rivers, and ground were deeply frozen at this period last year, and for weeks it was intensely cold. Weatherology is a puzzling science; yet meteorologists agree, in general, that the quantity of atmospheric heat in each year is the same; that is, when we have a cold summer, it is succeeded by a warm winter, making up the difference of temperature. There is one feature of the weather to which we have paid some attention, namely, the winds. Our weather depends on these entirely, but *they* are due to some cause or causes not yet fully understood, so as to be reduced to a science. During the early part of last winter the prevailing winds were northwest, north, and northeast-by-north. These brought bitter cold weather, and heavy snows. This winter, on the contrary, soft western breezes have fanned our cheeks, and southeast winds have brought plentiful showers, sometimes accompanied with thunder and lightning—most unusual phenomena in January. Many persons affirm that warm, open winters are generally followed by sickly springs and summers. We have no reliable facts to warrant us in placing undoubted reliance in such statements. We hope they will not prove true in respect to the succeeding seasons to this winter.

A letter now before us, from E. H. Cocklin, Cedar Valley, Iowa, describes the beautiful weather they have had in that State. Similar information has been derived from all the eastern, northern and western sections of our country. With a very few exceptions, the temperature has been above the freezing point some part of every day.

Walk up, Gentlemen, and Receive your Prizes!

During the past week, we have disbursed over eleven hundred dollars to the successful competitors for the prizes, as announced two weeks since. There are a few more yet to be paid; and as the amounts uncalled-for are not drawing interest, we advise such parties as have not ordered, to do so at once, and thus avail themselves of the use of the money so justly theirs.

New Information about Sorgho Sugar.

We have received some new and valuable information respecting the product of sugar from the above plant, accompanied with beautiful samples of loaf, refined white and brown sugar, and molasses, from Joseph Lovering, Oakhill, Philadelphia Co., Pa. To this subject we will direct further attention in our next number.

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Hair Specifics.—Dyes.

Since we published the article on hair lotions, a few weeks since, we have received several letters from correspondents, thanking us for the information; and in some of these, requests have been made for matter as reliable regarding hair dyes, which are generally sold at high prices.

Hair can be dyed every color by the same processes and chemicals as those used in coloring wool; but these are not applicable to hair on the living animal, as in almost every case, wool requires to be boiled in hot liquors. It has been found that the salts of some metals are adapted to the coloring of hair in a cold state; and these have been, and are, applied to change grey and red hair into brown and black. As grey hair imparts the appearance of advanced age to persons who may have become prematurely so by sickness, or other causes, it is quite natural that such should have a pardonable desire to make the color of their hair correspond with their years. In oriental countries the practice of coloring the beard has existed from time immemorial; and some of the inhabitants of Persia exercise a queer fancy in the choice of color. With us, a black beard is the grand point of "bearded beauty," but in Persia, blue beards are quite common. These are colored with a preparation of indigo; but it would be of no avail to describe how, as the boldest of the masculine gender among us dare not flourish one, well knowing that if he did so—from the low estimation in which he would be held by the fair sex—he would soon "die of the blues."

All dyes only color to the root of the hair; they must, therefore, be applied as often as the natural hair grows out and shows itself. The cheapest hair dyes are powders principally composed of lime and an oxyd of lead. The following is one of these:—

Take two ounces of powdered litharge, half an ounce of calcined magnesia, and half an ounce of powdered slacked lime. They are mixed intimately together, and are ready to be applied by reducing them to a cream-like consistency with soft water. When thus made into a paste, it is laid on the hair in a good coating, and then covered up with a silk handkerchief. The best time to apply it is before going to bed. In the morning it has to be rubbed off with a hard brush, for it sticks like mortar, and is a disagreeable, although an effectual dye. The hair is rendered harsh by it, and has to be softened with grease or oil. It is too troublesome for coloring the hair on the head, but may answer for dyeing the whiskers. This is the white powder sold for dyeing hair.

Another recipe of the same kind is as follows:—

Take one ounce of litharge, two ounces of carbonate or white lead, and three ounces of powdered quicklime. It is applied in the same manner as the former. Litharge and lime alone will also color the hair.

The hair dyes principally composed of nitrate of silver are the most convenient and best. This salt of silver, when applied in solution to hair, and exposed to light, converts it either into a dark brown or black, according to the strength of the solution; but it possesses the defect of staining the skin while it colors the hair; this result, however, can be avoided if moderate care is exercised, as we shall describe:—

Take twenty grains of gallic acid, and dissolve them in an ounce of water in an ounce vial; then take twenty grains of nitrate of silver, and dissolve them in half an ounce of soft water, to which should be added a weak solution of gum arabic or starch, and forty drops of ammonia, so as to fill an ounce vial. The gallic acid is now applied to the hair with a sponge, and allowed to dry; the nitrate of silver solution is then applied in the same manner, and allowed to dry under exposure to bright light. In about ten minutes let the hair be washed, and it is found to be colored from grey to a dark brown. This is a good dye; and although it colors the fingernails and the hair, it scarcely stains the skin—the gum arabic and gallic acid preventing it from doing this. Considerable of the coloring matter is washed off loosely, but enough is taken up by the capillary tubes to dye the hair. The ammonia may be omitted, and a weak solution of the hydro-sulphuret of ammonia used as a wash upon the top of the silver, after the latter has been on about five minutes. This is called the "magic hair dye," because it is so rapid in its action. Either ammonia or hydro-sulphuret of ammonia is necessary to color grey hair black; a strong solution of galls or sumac may be substituted for the gallic acid. The sulphuret of potassium (in solution) may be substituted for the gallic acid, the ammonia and the sulphuret of ammonia, by applying it to the hair first, and then allowing it to dry before the silver solution is put on. It has a disagreeable odor, however; but this may be counteracted by a perfume, such as oil of bergamot, lavender, or rose water. In applying any nitrate of silver solution to the hair, some care should be exercised to prevent it touching the skin.

One ounce of the sugar of lead dissolved and mixed with six ounces of the sulphuret of alcohol, (alcohol in which flour of sulphur has been steeped,) darkens the color of the hair and restores it, in a measure, if grey, to its natural color. Some perfume must be added to this mixture—rose water is commonly used. This lotion is called "hair color restorer." It is miserable stuff, and ought never to be used. These hair dye specifics may be greatly increased in number without an increase of useful knowledge. We have given the best that are used, so far as we know. The nitrate of silver costs one dollar per ounce; the other ingredients are cheap. For a few cents a person may color his red or grey beard by the above methods a splendid black, rivaling that of the darkest crow.

Paper Blankets put to the Test.

A correspondent of the Centerville (Ind.) *Chronicle*, having seen a notice "going the rounds" of the papers in regard to newspaper blankets, determined to try the experiment. The following are the results:—

"I first made a blanket (as they are termed) out of the *Chronicle*, placed it between two covers, and went to bed. That night I slept pretty well, except a little too hot for comfort. The next night I concluded to make a larger one, and out of thicker paper; for this purpose I procured the New York *Tribune*, and placed it as the above, and went to bed. That night I thought that the world was turning black. I saw a host of women dressed in breeches and eating bran bread, together with black devils and monkeys. I thought that I should suffocate. The effects of this bad feeling made me jump in my sleep, and aroused me. I then began to conclude that there was something in the contents of the paper, as well as its heating power; and for the purpose of testing this fact, I again placed the *Chronicle* blanket on the bed. My mind soon became calm and pleasant, and I slept well the balance of the night. I then began to conclude that I had discovered a new telegraph conductor to a man's mind.

The following night I made a blanket out of the Cincinnati *Enquirer* and *Commercial*, and sewed them together alternately, so as to use two of each, and placing them as above, went to bed. That night my ideas became quite chequered; first it would appear like so many little devils, and then again it would burst up in a brilliant light, and so on, until I was compelled to throw them off.

I now concluded to test the matter fairly, and for this purpose I made a blanket of the Scientific American, and placed it as before; the result was, my ideas became so bright that I could see through all kinds of improvements. I could see machinery, engines, and spindles by thousands, farming implements, household furniture, mitering and sawing machines, and, in fact, all kinds of machinery, so much so that I was compelled to take it off. I again placed the blanket of the *Tribune* on my bed, and found, to my surprise, that the same little black devils, monkeys, &c., made their appearance again."

[He concludes with the opinion that a blanket made out of some of the Indiana papers would produce the delerium tremens on the first night. Should his experiments prove to be veritable, it becomes a matter of importance that the blankets should be made of the right sort of newspapers, so as to avoid all evil results.—Eds.

Ourselves and Others.

Several times in our experience we have been called upon to prosecute applications for patents for our ingenious countrywomen, and we believe we have never failed in our endeavors in their behalf. In a recent letter from one of our female clients—and a woman of intelligence and energy she is—we find the following extract:—

"I will now mention to you what I never intended to repeat; but on noticing D. E. Turner's letter to you, in the Scientific American of December 12, 1857, it emboldened me to relate it. I spoke to an acquaintance of mine about applying for a patent on my improvement, and said I should employ Messrs. Munn & Co. as my attornies. He replied, 'Don't do that, for they will not do as well for you as some others you can employ.' I told him I believed you would never have gained your present *eminent position*, had you been other than straight-forward honorable men. I now am glad that I did employ you, for I do not believe that any other firm would have taken so deep an interest in my case as you have done; and you had much patience with me, for in writing business letters I was quite a novice."

We could fill our journal with similar commendations to the above. Previous to the establishment of our Branch Office in the city of Washington, it seems to have been the largest part of the occupation of some of the small Patent Agencies in Washington and other cities, to endeavor to hunt up and circulate, in a covert manner, something against the character and reputation of Munn & Co. So desperate had one of them become in efforts to hunt down our growing popularity, that he actually "set up shop" in the rotunda of the Patent Office, ready, upon the first appearance of an inventor, to pounce upon him, and, if possible, to extract an undeserved fee from the honest man, by warning the latter to beware of those terrible fellows at the Scientific American office in New York, who were gradually absorbing nearly all the business transacted with the Patent Office. Upon one occasion he actually fastened himself upon one of the members of our firm, mistaking him for an inventor, who had the agreeable pleasure of listening to a strange tale about his own affairs, of which he was hitherto wholly unaware.

Determined to put an end to this system of *shystering*, we resolved to establish a branch of our Patent Agency, at Washington. This branch has been in active operation over one year, during which time it has rendered efficient service to inventors; and with a view to its entire completeness in all its details, our respected senior partner is now in Washington, not only in connection with our clients' interests there, but also for the purpose of looking more thoroughly into the practice recently established at the Patent Office, under its present judicious and worthy Commissioner.

Our Patent Agency is now complete in all its arrangements for the prosecution of applications, re-issues, rejected cases, appeals from the decision of the Commissioner to the District Courts, &c. We have frequently been solicited by our clients to connect a *law* department with our Agency, for the litigation of patent suits in the United States Courts, but hitherto we have considered it imprudent to devote our time to any other than the prosecution of applications before the Patent Office.

Our unparalleled success has naturally excited the jealous ire of some of our cotemporaries; but this cannot check our progress.

During the four weeks past, *one hundred and six* patents have been granted to our clients, sixteen of whom are named in this week's list. These facts speak for themselves, and our business is rapidly increasing under the stimulus of the increased facilities established for its faithful prosecution.

Applications for Patent Extensions.

India Rubber Fabrics.—Charles Goodyear has made application to the Commissioner of Patents for an extension of the patent granted to him on the 9th of March, 1844, for the above invention. The petition is ordered to be heard at the Patent Office on Monday, the 8th of March next. Mr. Goodyear obtained two patents on the above date, one for "a manufacture of goods denominated corrugated or shirred india rubber goods," and another for a machine for the manufacture of such goods. We presume it is the first-named upon which the patent is sought to be extended.

Fire-proof Ceilings for Buildings.—Palmer Sumner, of New York City, obtained a patent April 25, 1844, for a metallic lath, made of plate or sheet metal, with the two edges bent over towards the middle, so as to form inclined ledges to hold the plastering. The increased attention paid to the construction of fire-proof buildings for a few years past has made this an important invention rendering its extension very desirable. The petition in this case is to be heard on the 12th of April next.

Parties wishing to oppose the extension of the above patents must file their objections, in writing, at least twenty days before the day of hearing.

Measures are now being taken by the Inspectors of the Philadelphia County Prison to give employment to the vagrant population committed to that institution. A mill for the grinding of wheat is to be put up. We have always had a repugnance to the employment of prison labor in competition with the industry of the honest artizan; but questions of moral responsibility require that the vicious and the imprisoned should be employed, as otherwise there would be little chance for their moral improvement. Idleness is the parent of vice.

The French Academy is determined to allow no literary men to enter it unless they are free from debt, and supported by a good moral character. A great many uncharitable people will come to the conclusion, after perusing the above, that the venerable French Academy will soon become perfectly dry of literary men. Out of debt means "owe no man anything;" good moral character means just what it says, and nothing more; each is a rare qualification in the gay French capital.

A ladies' association has been established in England, to promote care in the physical training of young girls, and for the diffusion of sanitary knowledge, and promotion of physical education. If such an association is of use anywhere, it is of use in the United States. American girls need physical training much more than the English. The want of education of this kind in our country is making mere dolls of many otherwise noble girls.

The Russian government has ordered that the *American* language be taught in the schools of Irkutsk, the capital of Siberia. There is a difference between the spoken English and the spoken American language. The Emperor of Russia evidently prefers not to have the letter *h* so sadly misused in his Siberian possessions as it is in Mother England.

Sugarcane mills are in demand by some of our subscribers. Manufacturers will do well to note this fact, and act accordingly.

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Correspondents

J. P. S., of Ohio.—Kerosene oil is more volatile than whale oil, hence, if used in open lamps, it must be more injurious to health, but as it is burned in close lamps, it is just as healthy.

W. J., of Tenn.—We cannot refer you to any printed work containing more information relating to the crystallizing of the sorgho sugar than is to be found in our columns. The business is new, and further experiments are required.

M. and L. S., of C. E.—You will find that if you stamp out the copper bottoms of your tea-kettles with two or three blows, instead of by one heavy fall of the hammer, they will not be so liable to wrinkle.

S. S., of Ohio.—Resin, wax and gutta percha will answer for insulating telegraph wires, but not quite so well as glass. The larger the body of glass employed, the more perfect will be the insulation.

C. J. W., of Ill.—According to the law of diffusion, as it relates to gases, there is no greater affinity shown by one more than another in the dry state. Oxygen and hydrogen have an equal affinity for carbonic acid gas. Lime water is the best absorbent of carbonic acid gas; fresh charcoal the next.

J. G. B., of N. J.—Cut nails are made from small plates of iron which are heated in fires near the machines to the proper temperature.

I. P., of Wis.—Your sample of Indian hemp is not so strong in fibre as American or Manila hemp. We like the common plain board fence better than the one represented in the sketch you have sent us. If the feet of the posts were boiled in a solution of sulphate of copper or in tar, they would last twice as long in the ground. It is not the first but ultimate cost of fences to which farmers should look. Your plan is cheaper, but not so strong as the common fence.

W. Fishbach, of Stanardsville, Va., wishes to correspond with manufacturers of bent brims for truck wagons.

J. J. S., of Ill.—We cannot supply Patent Reports to our subscribers. They must depend upon their members of Congress, as the Commissioner of Patents has comparatively few copies at his disposal.

L. M. M., of N. Y.—We do not know of the existence of any patent on an eave trough sawed out of plank.

G. M. N., of Ga.—We doubt whether any patent could be obtained on your rule. The slide rule, either the carpenter's or engineer's, does the same thing and on the same principle.

F. P. C., of S. C., wishes us to inform one of our correspondents in reference to his appliance for arresting bed-bugs in their progress up bed-posts, which we noticed in this column some weeks since, "that he need not trouble himself further, unless he can keep the aforesaid animals from crawling altogether, for I have known them to navigate up the wall, thence on the ceiling till well over their victims, then an easy let go, and all right for the night."

W. R., of Ind.—From so small a specimen we cannot precisely tell what the mineral you sent us is, but we think it is carbonate of lime. If so, it is not what would be called poisonous, but if taken in large quantities would make a person very ill. We cannot divine why you ask such a question. You don't think of eating stones, do you?

M. A., of Md.—It is impossible for us to give you the information wanted. We cannot tell you which is the best waterwheel, because the efficiency of any wheel, independent of the principles of its action, depends on the workmanship. Contract with a millwright or wheelmaker to build a desirable one that will give out 75 per cent of the water power, and you cannot go wrong.

G. P. T., of Me.—The creosote which forms in the pipes of stoves or furnaces in which wood is employed for fuel cannot be prevented if these pipes pass through a cold atmosphere. The creosote is the acid of the wood condensed from the smoke. If you keep your pipes at the temperature of boiling water, you will not be troubled with creosote; if you cannot do this, give them considerable inclination, so as to allow the acid to flow down and not lodge.

J. R., of Ohio.—Those wise men in your place who are determined to obtain the power of twelve men from the labor of two, by swinging a long lever, should be allowed to take their own course. After they have accomplished this grand object, they will be perfectly able to stop the flow of the Ohio river with a pitchfork.

S. E. P., of Pa.—Any new and useful information which you can impart relating to saws, and the management of sawmills, will be very acceptable.

H. H., of Ill.—Wax is bleached by first melting it over water, with about one-fourth per cent of tartar, and constantly stirred; it is then drawn off and allowed to run into cold water, and this ribboned wax is afterwards bleached by the sun. Sunflower oil is made in precisely the same manner as linseed; in fact, all oils which are expressed from seed are made by the same processes. As to whether it would be profitable or not, we cannot tell. Experience can only decide that question.

P. C., of Vt.—Kline's compass, with the iron ring surrounding the needle card, has been found more reliable on the steamship *Adriatic* than any of the common compasses on board. Something has been done towards nventing a pencil to write and make marks equal to pen and ink writing, but there is plenty of room for you to operate; pen and ink writing still maintains its place for want of "the" perfect indelible writing pencil. Your bench hook, composed of a spring movable in a slot, and capable of being elevated and depressed by a screw, appears to resemble the old-fashioned bench hook so nearly, that we decline giving you any encouragement as to its patentability.

P. E., of Ala.—We are very glad to hear of your excellent success with the circular sawmill. We hope the promised models will be sent on soon.

B. L. G., of Pa.—It is customary with the Commissioner of Patents to send patentees a copy of his annual Report, which contains notices of their improvements.

D. B. B., of Pa.—We remember that your case was three times rejected before we finally succeeded with it. We saw, upon a close examination into its merits that full justice had not been done to it. We thank you for your good opinion of our exertions in your behalf.

M. B., of Ind.—The earth completes its revolution round the sun, as measured from any one period of time during the year. It no more completes its revolution on the 22d of December annually, as asserted by the philosopher in your neighborhood, than on the 22d of September.

J. H. K., of Mass., remarks, that we appear to have a mind of our own in spelling words. "You spell," he says, "the word height *hight*, so I presume you would also spell chalk, *chork*, and so I might go on, but time will not permit." Our learned correspondent presumes a little too much, and no doubt his want of time has saved his own orthography from a violent wrench. We do not profess to have a way of our own. We adopt the simplest method recognized by standard authority, and if J. H. K. had looked at Webster, he would not have betrayed his ignorance upon this subject. It is very evident that he has a different authority wholly unknown to us, as we perceive in his letter before us that he spells the word "similar," *simalar*. It may be, however, that some critics spell it in that way.

G. S., of Pa.—There is nothing new in your boiler feeder. Such feeders, that is to say, consisting of a vessel arranged above the water level of the boiler, and connected with the steam and water spaces thereof, so as to enable the water in the said vessel to be placed in equilibrio, that it may descend into the boiler by gravitation, have undergone many modifications. The only one we are enabled to refer to particularly at the present moment was patented June 14, 1854, by H. C. Sergeant, which is entirely automatic in its operation.

A. E. S., of Ind.—Gold pens are pointed with a metal called rhodium, and the tips are soldered on. Looking-glass frames can be prepared in the way you name, but they never are, being always gilded with leaf gold. Your method of plating watch cases may produce a good gold surface to look at, but it will not wear. We would advise you to use the usual alloy for plating. The metal you sent us was iron pyrites or sulphide of iron, and is worthless. Gold foil can be beaten into watch cases or amalgamated on to them, but we are not aware that any cementing process is carried out by platers.

G. & F. Spicker, of Cincinnati, Ohio, wish to correspond with some manufacturer of round looms for making jackets.

H. N. H. B., and M. V., of Cal.—We thank you for your generous lists of subscribers. You have done nobly for us, and we are very grateful for it.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, January 16, 1858:—

V. & H., of N. Y., $30; W. H., of N. Y., $25; P. C. M., of Ill., $25; W. G. S., of Mass., $55; F. H. S., of Conn., $30; H. D. B., of N. Y., $25; E. S., of Conn., $30; L. D., of N. Y., $30; R. H. K., of N. Y., $25; H. & S., of Ill., $25; P. A. G., of Mass., $30; W. & S., of Mass., $25; J. B. A., of L. I., $30; G. J. L., of N. Y., $57; L. W., of Ohio, $25; M. G., of Pa., $30; J. D., of N. Y., $55; H. A. L., of N. Y., $30; C. L. C., of N. Y., $46; G. B., of Md., $30; T. D. I., of Mich. $55; L. R., of Mass., $40; D. R., of N. C., $55; A. D. B., of Mass., $110; F. N., of L. I., $10 W. H., of L. I., $25; S. L., of L. I., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, January 16, 1858:—

A. D. B., of Mass., (3 cases); D. R., of N. C.; F. N., of L. I.; L. B. S., of Conn.; J. K. B., of N. Y.; C. & Q., of Mass.; W. H., of L. I.; F. W. W., of Texas; P. C. M., of Ill.; C. A. C., of Pa.; L. W., of Ohio; H. D. B., of N. Y.; H. P., of Pa.; S. L., of L. I.; H. & S., of Ill.; R. H. K., of N. Y.

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will be, as usual, at No. 128 Fulton street, New York. There is no other city in the Union so easy of access from every quarter as this, consequently there are greater advantages in regard to the transmission of models, funds, &c., through the various channels that center in New York. Two of the partners of our firm reside here, and during the hours of business are always at hand to counsel and advise with inventors. They are assisted by a corps of skillful Examiners, who have had many years of active experience in the preparation of cases for the Patent Office.

To render our Patent Agency Department complete in every respect, we have established a

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We have been accustomed from the commencement of our business—twelve years since—to examine sketches and descriptions, and give advice in regard to the novelty of new inventions, *without charge*. We also furnish a printed circular of information to all who may wish it, giving instructions as to the proper method which should be adopted in making applications. This practice we shall still continue, and it is our purpose at all times to give such advice free and candidly to all who apply to us. *In no case will we advise an inventor to make application unless we have confidence in his success before the Patent Office.*

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PRELIMINARY EXAMINATION

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Yours, very truly, CHAS. MASON.

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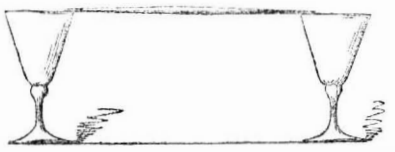
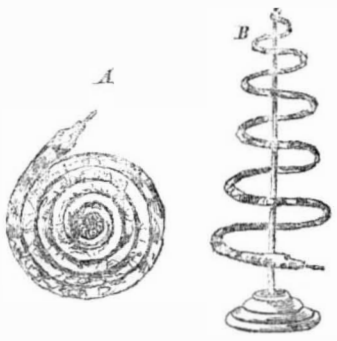
If a stick is taken and tapered off to the ends equally from the center, and the stick itself be not too thick, and if it is then placed with its tapered ends resting on two wine-glasses, a good smart blow being struck on its center, it will break in two without damaging the wine-glasses. The cause of this involves a curious principle of the laws of force, of which there are many illustrations well known to every one. The blow being given very quickly and evenly, and the substance which strikes having a rapid motion, it is suddenly arrested in its downward course by the stick across the wine-glasses, and it passes through it or breaks it, because there is not time enough for the momentum of the blow to spread along the stick and break the glasses. Another illustration is firing a candle through an inch board. If a gun be loaded with pow-



der, and a candle just fitting the barrel is inserted in place of a bullet, and the gun fired against a door or other piece of wood, the candle will pass through leaving a clean, smooth hole, because when the candle comes to the door, it is evident something must give way, and as the candle is moving so fast, it actually has not time to break, and the wood is perforated. In many countries of Europe, where liberty has no existence, except in name, letters are opened by the Post-office, an impression of the seal being first taken by striking a piece of lead sharply on it, when the lead receives the impression without breaking the seal. The letter is then opened and read, and re-sealed with the lead reverse, so that the recipient little suspects that his letter has been unfairly opened.



The above illustration represents an amusing and instructive experiment, which proves the ascension of heated air by rendering its effects visible, and it may also be used to test the direction of the currents in our rooms and dwellings. To construct one, a piece of card board is taken and cut in the form of a spiral as at A, and to give effect it may be painted to represent a serpent. Then prepare a stand as at B, having a needle in its upper end, and suspend the serpent from its center on the needle, when it will assume the position shown at B. If this be now placed over a stove, or the tail of the serpent suspended by a bit of thread over a lamp, the heated air ascending through it will cause it to revolve in a very amusing manner. Two serpents may be made to turn in opposite directions, by pulling one out from the one side, and the other in the reverse direction, so that their heads may point towards each other when suspended.

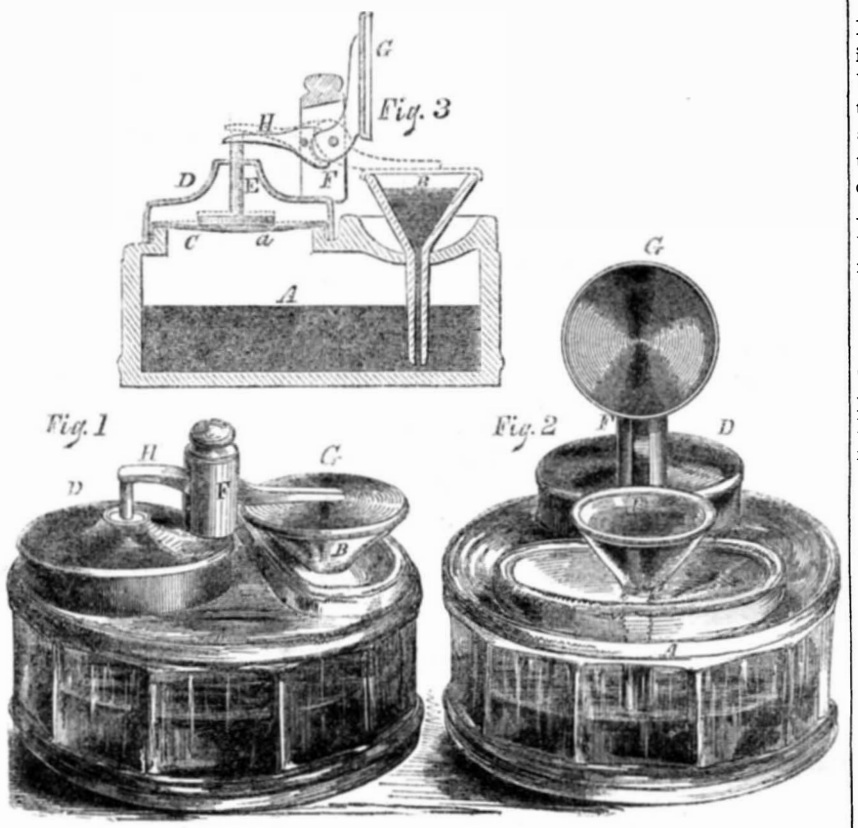
What the Panic has Cost.

A Mercantile Agency in this city has prepared a circular, showing the extent of the late commercial panic, as recorded in their books. The number of firms in the United States, by their records, is 204,061. There has been lost by 337 swindling and absconding debtors, $5,222,500, and by 512 firms which will pay nothing, $20,309,000. There are 3,803 concerns owing $197,080,500, such cases as usually average 40 to 50 cents; and there are 435 houses owing $77,189,000, which will pay in full, leaving a final loss of $143,780,000. This "senseless panic," as it has justly been characterized, not only swept over the whole United States with the ferocity of a hurricane; but it has now reached the very furthermost bounds of civilization.

A journal in this city, peculiarly fond of horrid details, and which sees "raw head and bloody bones" in all the transactions of business out of its own pure self, estimates the total liabilities resulting from the failures in Europe at $400,000,000, with assets of only $80,000,000, thus showing a loss (if the figures do not lie) of $320,000,000.

There can be no doubt of the fact that, in in proportion to the actual wants of the people, there are too many traders and too few producers. This state of things naturally incites competition, and stimulates credits to an alarming degree. This should not be so; but we doubt if the terrible lessons of 1857 will be heeded. It has been said that "a wise man will learn wisdom from his own experience; but no human being ever learned anything from the experience of others."

ROBJOHN'S SELF-ACTING INKSTAND.



The old but true saying, that "the pen is mightier than the sword," is daily becoming more general in its application, and more comprehensive in its range; and that fluid without which the pen is of no use, is, so to speak, marking out the onward progress of civilization. This fluid, ink, is composed of various materials; but its permanent black principle chiefly depends on a certain compound which is formed by its ingredients, which are generally an infusion of logwood with bi-chromate of potash, or sulphate of iron—either of these latter substances developing a permanent black color. As every one who writes (and who, now-a-days, does not?) knows that there is a certain consistency or thickness at which ink flows most freely from the pen, and of this thickness it is usually manufactured; but after it has been only a few hours exposed to the action of the air, it becomes thick and cloggy, from evaporation. To prevent this, much ingenuity has been exercised, and many forms of inkstands devised, from the celebrated one of Perry to the one we are about to describe, which is the best, as well as the most recent.

The aim of these inkstands is to allow the ink only to be in contact with the air while it is in use, and cover it up when not, and at the same time force it through such an orifice as will prevent any of the solid particles passing through. This is perfectly done in the subject of illustration, in which Fig. 1 is a perspective view of the inkstand closed, Fig. 2 also a perspective view of the inkstand, open, and Fig. 3 a section of the same. Similar letters refer to the same parts in each.

A is the ink receptacle, made of glass, and formed in any suitable and convenient pattern. It is filled about half full of ink, leaving an air space above, and the funnel, B, passes down into the ink through a hole in the top, which it must fit perfectly air-tight. The large hole, *a*, is covered with a piece of india rubber cloth, C, which again is covered by the metallic case, D, having a hole in its top, and the little piston, E, passing through it. This piston serves the purpose of pressing on the india rubber with its broad end, and so compressing the air inside and consequently forcing the ink up the narrow orifice of the funnel into its basin, where the pen is dipped.

On D is mounted a short standard, F, to which is hinged the funnel cover, G, and the little lever, H, each moving on a separate axis, and so connected that when the cover, G, is closed, as in Fig. 1, the piston is simply resting with its own weight on the rubber, and does not exert any pressure on the contained air; but when it is opened as in Fig. 2, the pressure is exerted, and it acts as stated above. The dotted lines in Fig. 3 also show this. It is also applicable to any fluid which requires to be kept from the dust, such as watchmaker's oil, and the like. As we consider this the *ne plus ultra* of inkstands, it offers a good chance to any one who may wish to engage in its manufacture and sale.

It was patented August 25, 1857, by Thos. Robjohn, 449 Broadway, this city, to whom all letters should be addressed.

Preparing to lay the Atlantic Cable.

The steam frigate *Niagara*, which was employed last year as one of the squadron in the unfortunate attempt to lay the above-named telegraph cable, is now at the Navy Yard, Brooklyn, undergoing a thorough overhauling inside and out. Her machinery is to be refitted, but we suppose no alterations are to be made in it. It is now reported that she is to be again employed in the second attempt next summer, to lay the cable, and the changes she is now undergoing are designed to place her in the most effective condition for that prospective event.

Sword Blades.

It is stated that all the sword blades made for the English army are the work of four men, three of whom are brothers. There is a secret in the mode of manufacture, known only by these four, and which they jealously guard. They select their own assistants and have the right to discharge them at pleasure, when they do not like them. One of the brothers, at Enfield, makes eighteen blades per day, and his average weekly earnings are about $50.—*Exchange.*

We very much doubt this statement, and we insert the paragraph hoping for some further information on the subject. We knew that there is a large sword manufactory at Enfield, but we were not aware that a monopoly existed.

A curious lawsuit is going on just now in Berlin. A rich banker of that city, who is ill of the small pox, has had two actions brought against him, one by his barber, and the other by his upholsterer, who claim damages because he communicated the malady to them. They demand compensation for the doctor's expenses, and the time they have lost. According to the Prussian law, the banker was bound to hang up outside his door a notice with the words, "There is a person here ill of the small pox."

Dr. Emmons, State Geologist of North Carolina, publishes a long report, going to prove that the valley of the Deep river, in North Carolina, is a suitable site for a national foundry, being rich in coal and mineral.

INVENTORS, MANUFACTURERS, AND FARMERS.

THIRTEENTH YEAR

PROSPECTUS OF THE

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